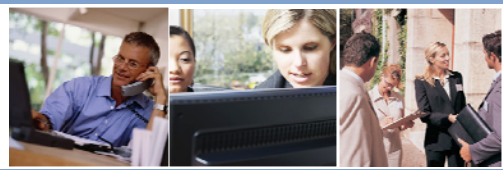


Report:
WEST DES MOINES ECONOMIC DEVELOPMENT PLAN:
TARGET INDUSTRY ANALYSIS



www.angeloueconomics.com

REPORT:
West Des Moines Target Industry Analysis

TABLE OF CONTENTS	
EXECUTIVE SUMMARY	2
INTRODUCTION	3
INTRODUCTION TO WEST DES MOINES	3
INTRODUCTION TO THE TARGET CLUSTER APPROACH	5
WEST DES MOINES TARGET INDUSTRIES OVERVIEW	9
TARGET INDUSTRY PROFILES	12
FINANCIAL SERVICES / INSURANCE	12
RETAIL / HOSPITALITY / LEISURE	17
INFORMATION TECHNOLOGY	22
LIFE SCIENCES	27
ADVANCED LOGISTICS / MANUFACTURING	33
OCCUPATIONAL REQUIREMENTS	38
REAL ESTATE REQUIREMENTS	46
TRANSITION TO RECOMMENDATIONS	48
APPENDIX	50

Delivered to:
The City of West Des Moines, IA

Prepared by:



EXECUTIVE SUMMARY

The West Des Moines Target Industry Analysis is the second of three reports developed to guide the city in building a comprehensive economic development strategy for the city. The Economic Scan report served as the foundation for this Target Industry Analysis that examines the industry clusters that represent the strongest target opportunities for West Des Moines – those that create long-term, sustainable high-wage jobs.

REPORT FORMAT

This report includes four primary sections: 1) Description of AngelouEconomics' process in selecting the target industries; 2) Profiles of each industry, including national and local trends, specific industry requirements, and an assessment of West Des Moines's assets and challenges specific to each industry; 3) Analysis of workforce development and real estate requirements of the target industries; and 4) Review of critical issues that West Des Moines will need to address to effectively grow these industry clusters – and opportunities that will be addressed in the final economic development strategic plan.

TARGET INDUSTRY SELECTION PROCESS

AngelouEconomics (AE) examined a variety of factors to assess which industries should be critical targets for West Des Moines's future economic development planning efforts. We reviewed West Des Moines's current industry mix, emerging and growing industries in the area and nationally, and the city's current key assets (e.g., advantageous location near a major metro area, a well-educated professional workforce, high-quality infrastructure, etc). Our assessment revealed a diverse but interrelated mix of five industries that West Des Moines should focus future business attraction and retention efforts upon (with equal priority):

- Financial Services / Insurance (finance and insurance services, back office/IT)
- Retail / Hospitality / Leisure (full-service hotels, cultural enterprises, specialty retail)
- Information Technology (software development, data centers)
- Life Sciences (specialized care, medical supplies logistics & supply chain, agri-based bioscience)
- Advanced Logistics / Manufacturing (medical devices, global supply chain, equipment/components)

These industries represent a mix of export-oriented and local-serving sectors, all of which support primary wealth creation in the region. Focusing on these five industries plays to the strengths of West Des Moines, not just from a traditional economic standpoint, but also from the perspective of moving from what is achievable in each industry today to what can be achieved in five, ten, fifteen years and beyond.

Each of these industries has very specific industry requirements, including workforce needs, infrastructure demands, business climate preferences and other critical criteria that factor in to how companies in these industries choose where to locate. While our assessment of West Des Moines shows that the city is positioned to begin to capitalize on these industries, there are still areas of progress needed to ensure that the city can effectively attract and grow these industries to build sustainable high-impact clusters and a dynamic pool of home-grown talent.

INTRODUCTION

REVIEW OF WEST DES MOINES' ECONOMY AND ECONOMIC DEVELOPMENT ASSETS

This report takes a deep look at industry sectors in the Des Moines region (and West Des Moines in particular) and, based on existing assets and future potential, identifies a set of target clusters and specific niches that should become the focus of the city's business attraction and retention efforts.

The selection of these target industries was informed by findings from the AngelouEconomics *Report 1: Economic Scan* which evaluated the current state of affairs in West Des Moines most critical to economic development and industry growth. The report identified a number of underlying economic, demographic, and labor market issues as well as a number of specific critical strengths, opportunities and challenges summarized and grouped here in four general categories most critical to site selectors:

SITES & PHYSICAL INFRASTRUCTURE

Many of West Des Moines' biggest economic development competitive advantages are its locational assets, including its geographic position along two interstates and within close proximity to the Des Moines International Airport. The ease of transportation mobility, market access, and the city's exceptional reputation for other physical infrastructure development has supported a historically robust office market maintained even during the current economic recession. The city's success in luring a number of major financial service firms and upscale retail projects is testament to these factors.

As the city continues to grow, however, (in population, square miles, and in new/expanded businesses) and build out the city, increased land-use and infrastructure planning and coordination will be critical to ensure that it can provide the necessary water, electricity, and gas to meet demand. This is especially important for strategic areas like the Iowa-5 corridor and the additional office and industrial opportunities that it provides.

Finally, while the city boasts a number of excellent retail and hospitality amenities, there is a growing demand for increased cultural and quality of life offerings that will both attract more visitors as well as create a unique "sense of place" for current residents, especially the younger demographic.

WORKFORCE DEVELOPMENT & INNOVATION

West Des Moines benefits not only from an extremely educated workforce but from some specific key education and workforce development components including high-performing K-12 systems and a premiere community college (DMACC) with a high-tech campus within city limits. As the city diversifies its industry base, it must integrate economic and workforce development efforts to ensure that a local workforce has the right competencies to feed into new growing West Des Moines' businesses (e.g. new hospitals, IT firms, etc) that will require a number of highly skilled professionals.

"Innovation" indicators – measures for how well a location is developing and commercializing new technologies – for West Des Moines are mixed. While the state ranks high in terms of patent activity (especially around bio-tech and life sciences), West Des Moines has very few patents issued each year. In addition, while there is a significant amount of research and development occurring nearby (e.g. at Iowa State University) this has not directly benefited West Des Moines yet in terms of commercialized technology or business spin-offs.

INTRODUCTION

BUSINESS CLIMATE & COST STRUCTURE

The city enjoys a reputation as having a very strong business climate and efficient city regulatory processes. Compared nationally, business costs in West Des Moines are favorable, with lower state and local corporate income taxes, very competitive utility rates, and low labor costs. In addition, its concentration of white collar jobs and low cost-of-living makes it an attractive place for young professionals, especially those between the ages of 30-44. Regionally, West Des Moines also fares relatively well. Of the ten largest cities in the state, West Des Moines has the third lowest city property tax rate and has proactively limited other taxes (e.g. franchise taxes on gas and electric consumption) that some surrounding communities have imposed.

However, compared regionally, West Des Moines faces higher land costs that make it less attractive to larger industrial and warehousing firms that are sensitive to site costs. In addition, while the city has had great success in attracting larger corporate operations there is some sentiment among business owners and other stakeholders that business retention and expansion efforts with smaller, locally-owned companies may be less of a priority for the city. The city's incentive tool set reflects this – with limited financial support for existing businesses seeking to expand or relocate within the city limits.

SPECIFIC ECONOMIC DEVELOPMENT ASSETS

The city boasts a number of important assets that, if leveraged, can position it for continued strong economic development growth.

- Superior location at cross-section of I-80, I-35, and I-235 providing ease of mobility and access.
- I-5 corridor – and its connection to the Des Moines International Airport – is a crucial asset toward developing a more “global” industry presence for the city.
- Available land and very strong retail market (especially in office and retail space), even in the down economy.
- Top high school graduation rates and skilled workforce with a very strong work ethic.
- The DMACC-West campus and its focus on technology simulation programming.
- Drake University (with particularly strong business programs) and Iowa State University (with more than \$210 million in R&D dollars annually) offer great opportunities to continue to build a skilled workforce and tap into more “innovation-based” industries.
- With new major corporate locates and expansions including Aviva, Wells Fargo, Iowa Clinic, and Mercy West Lakes and Methodist West hospitals, the city also has at its disposal some dynamic private sector “assets” within global companies.

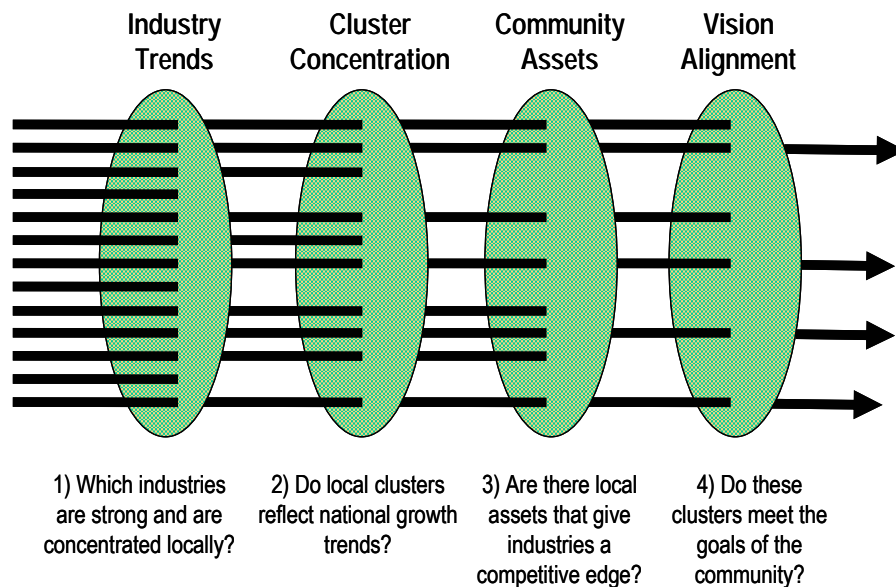
INTRODUCTION

INTRODUCTION TO THE TARGET CLUSTER APPROACH

The development of competitive clusters is one of the key generators of regional wealth. A cluster develops when businesses in interrelated industries choose to locate in close proximity to take advantage of a region's inherent advantages. These businesses then become interdependent on each other and, in the process, enhance their operating environments and ultimately grow to be more competitive on the global landscape. As this happens, company profitability rises, wages increase, and the region yields significant benefits.

For this report, we conducted a cluster analysis of the region to determine which industries are dominant in the area. These clusters were analyzed to determine national and regional growth trends, and local assets that benefit the clusters that were identified. In conjunction with the community vision identified through an extensive public input process, this analysis provided a basis for the identification of West Des Moines's target industries.

ANGELOUECONOMICS TARGET INDUSTRY SELECTION PROCESS

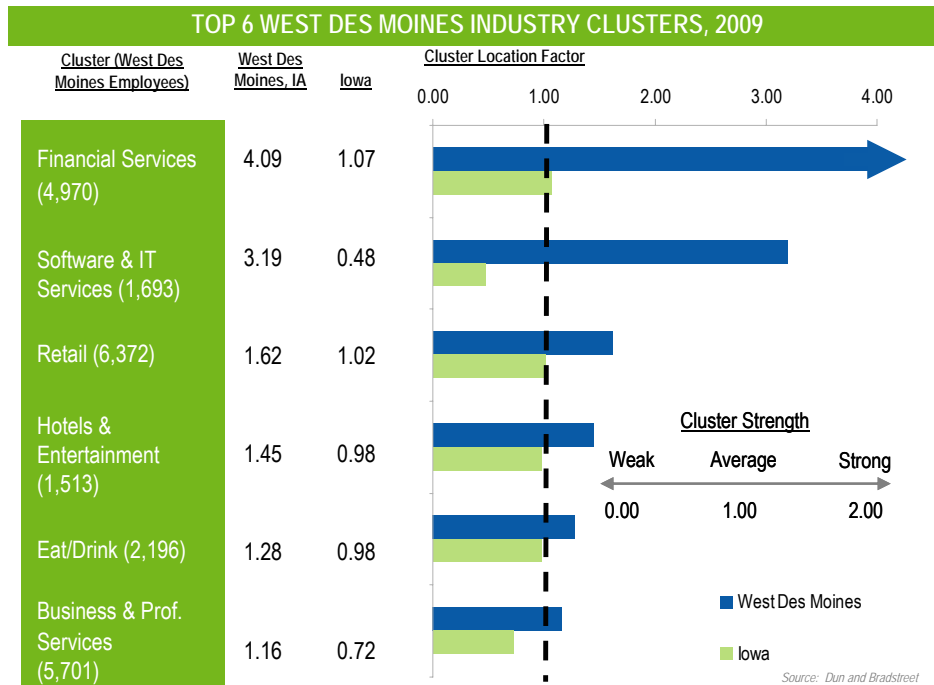


PROCESS / METHODOLOGY

AngelouEconomics employed a combination of quantitative and qualitative analysis to select the best target industries for West Des Moines. Our approach included four steps guided by the following questions. *For a full description, see Appendix A.*

1. **What industry clusters currently exist locally, and are they growing?**
Immediate and obvious target candidates are those experiencing growth within the community or surrounding communities, particularly those growing faster than the national average. Industries that have a large presence, but lack growth suggest the region is losing its competitiveness in this industry. While the industry may be a candidate to target for a retention effort, a long-term decline calls for a close look at transitional opportunities into new industries that create jobs. The figure below highlights the top West Des Moines industry clusters *today* by location quotient. These factors are calculated by comparing the cluster's share of total local employment to the cluster's national share. This location quotient will yield a value generally between 0 and 2, where a result of "1" demonstrates that the cluster commands an average (expected) share of the local economy. Cluster location factors greater than 2 indicate a strong cluster agglomeration.

INTRODUCTION



2. Do current and emerging local industry clusters reflect national industry growth trends?

In addition to reviewing the growth patterns of industries locally it is important to understand how well these industries have been, and will continue to, perform nationally. Nationally, if an industry is losing market share and jobs it is likely that that is not a target with short or long-term potential. However, if a community has a high concentration of firms within an industry that is shrinking nationally (and these local firms are performing well) it denotes the community's 'specialization' in the industry – and thus reflects a competitive advantage nationally.

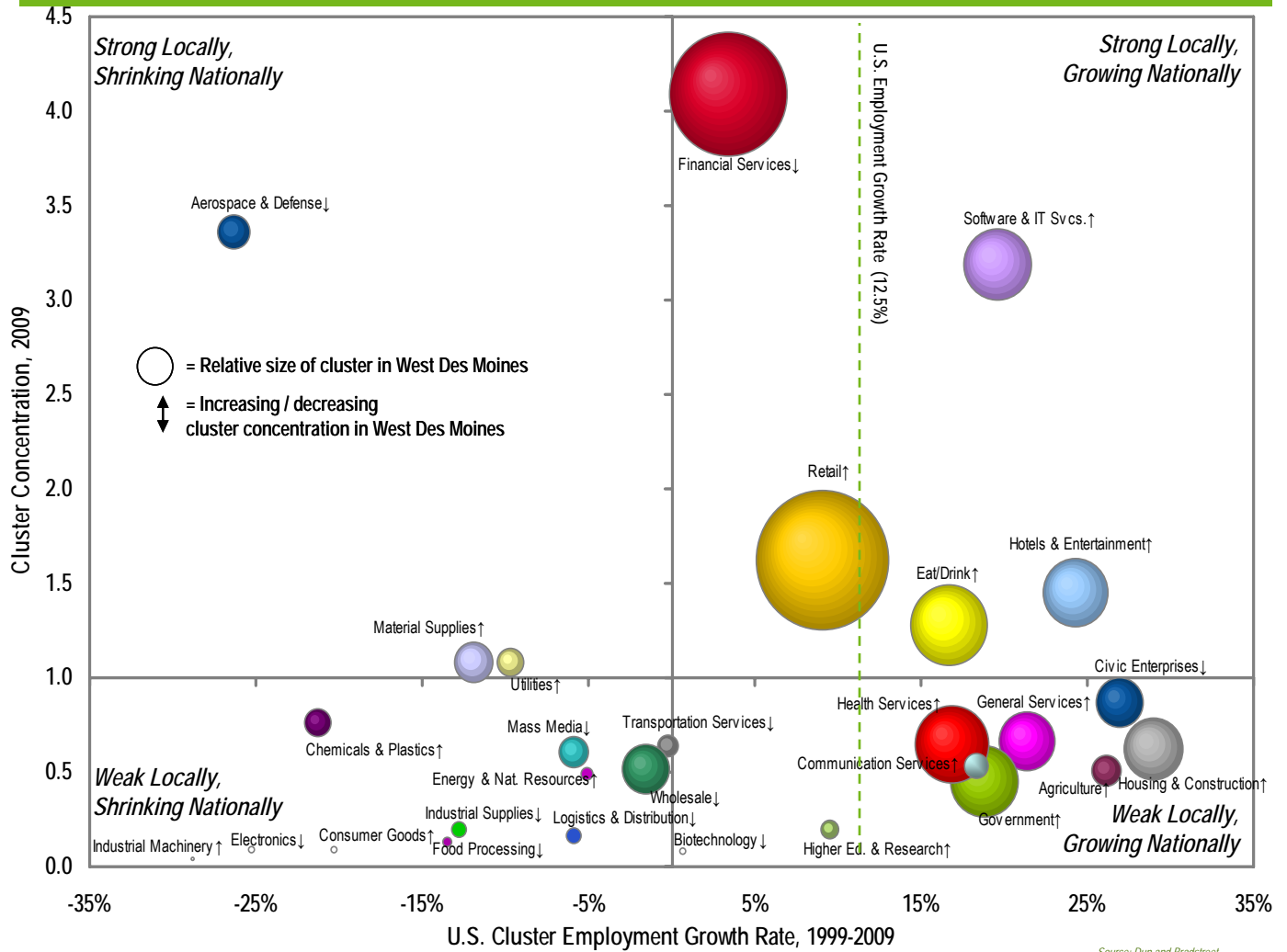
This chart on the following page displays the results from a shift-share analysis conducted to determine strength of local industry clusters relative to the national economy. This analysis identifies industry sectors that are gaining strength by outperforming national trends as well as those local sectors that capture a larger share of new jobs in the U.S., suggesting an increased attractiveness and competitiveness for the regional cluster. The vertical axis represents the industry's local strength (as indicated by its location quotient (LQ) or cluster), a higher position means a stronger industry concentration. The horizontal axis represents the industry's growth nationwide over the past ten years; a position on the left half of the chart indicates negative growth, while a position on the right side indicates positive growth. The size of the bubble represents the relative amount of employment in the industry; the larger the bubble, the more people work in this industry in West Des Moines.

This analysis reinforces the West Des Moines region's strengths in financial services and retail & hospitality (which are both large industry sectors in the city currently and growing); as well as software & IT services which is not as concentrated but also growing quickly.

While the current national downturn has had a major negative impact on a number of different industries nationally, some, namely health care and technology (computer systems design, internet services and data processing), are, and will continue to, grow. In addition, most economists believe that industries that were performing well prior to the recession (e.g. financial services, retail, life sciences, etc.) will likely rebound again in 2010 and continue on their growth trajectories.

INTRODUCTION

WEST DES MOINES CLUSTER CONCENTRATION AND SIZE, 1999-2009



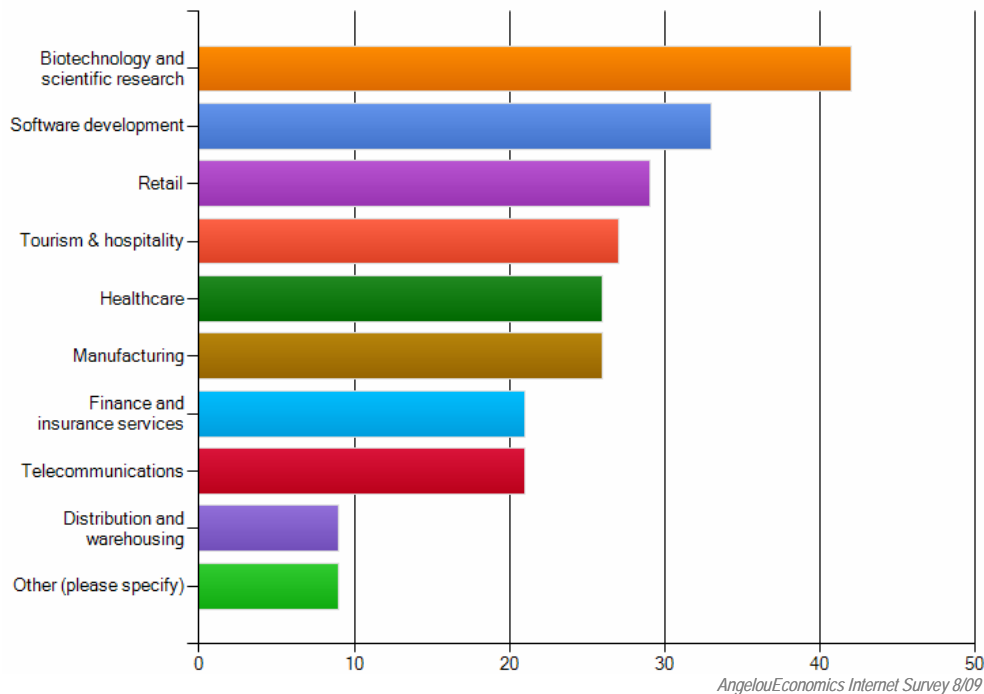
Source: Dun and Bradstreet

INTRODUCTION

3. Are there local assets that give specific industries a competitive edge?

Every community has unique strengths that companies can leverage to create competitive advantages. These strengths can include such things as tax structure, infrastructure, market proximity, and workforce skills, among others. The challenge is to identify key assets in West Des Moines that will support a wide range of industries to thrive, while working to improve the city's "product" (e.g. infrastructure, cost of business, quality of life, etc). See page 4 for a short list of critical West Des Moines economic development assets.

**What type of businesses would you like to see expand or locate in West Des Moines?
(Choose as many as three.)**



4. Does the industry match community goals?

Finally, the most important criterion is often whether or not the industry matches the stated economic goals of the community. For West Des Moines, for example, while there was expressed interest in attracting smaller, advanced manufacturing businesses, many stakeholders expressed that large manufacturing plants should be avoided in part because of the prevailing below-average wages and potential environmental consequences. Focus group, interview, and survey data, gathered by AngelouEconomics, identified a strong interest in attracting more high-tech and life science (e.g. biotechnology) firms as well as companies (e.g. specialty home grown retail) that help maintain a small-town appeal.

These questions act as a filtering mechanism by which industries are screened for suitability for West Des Moines at each step. In many ways, target industry selection is better described as target industry "elimination."

WEST DES MOINES TARGET INDUSTRIES OVERVIEW

OVERVIEW OF RECOMMENDED TARGET INDUSTRIES

At the conclusion of the target industry identification process, five industries stand out as the primary focus of business retention, expansion, and recruitment efforts for the city. These industries demonstrate potential for long-term economic growth, and present West Des Moines with strong assets and short-term opportunities for retention, expansion, and recruitment:

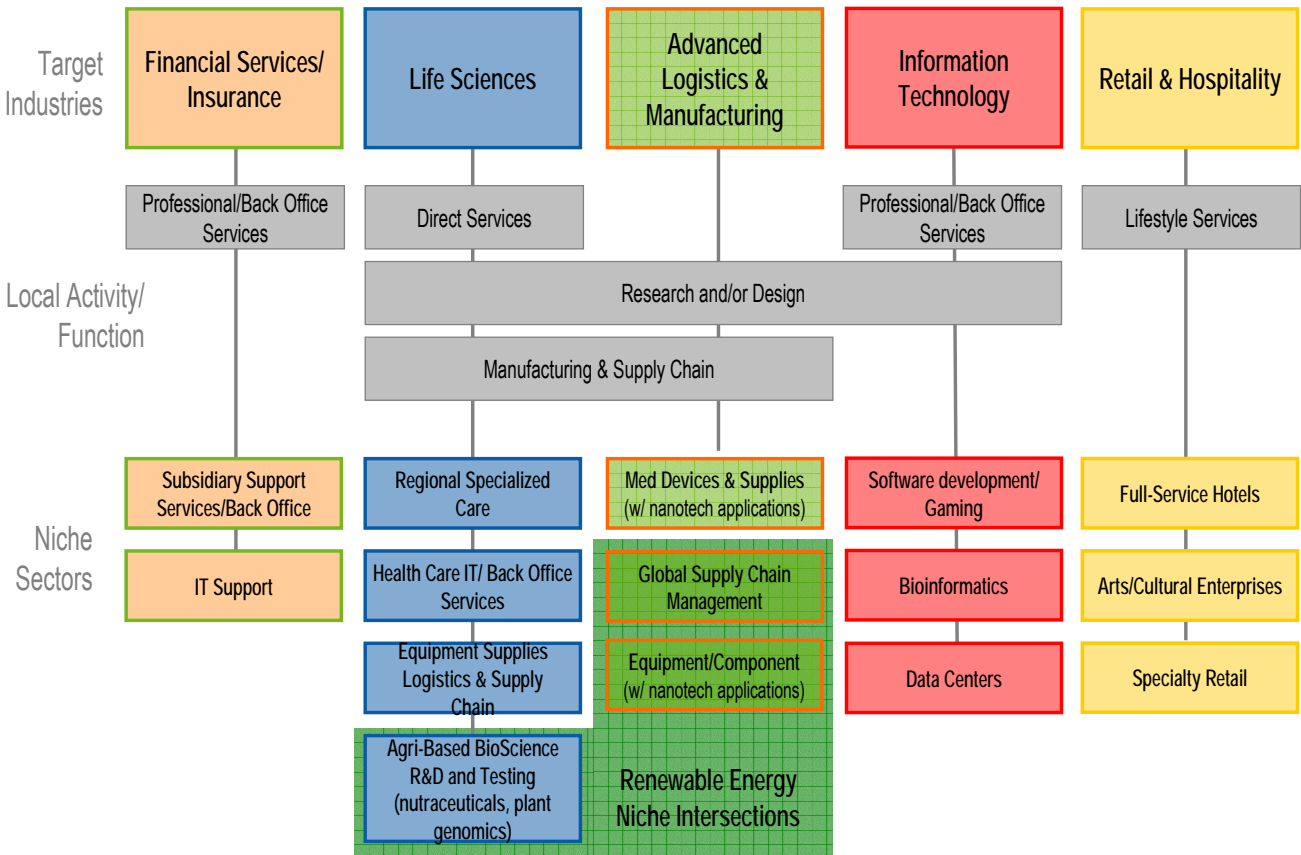
WEST DES MOINES TARGET INDUSTRIES



The target industries we have recommended will complement West Des Moines' existing industry mix, workforce, sites, and future vision that will help create a sustainable, diversified economy with sectors that employ above average wage jobs with potential for growth.

For the purposes of this study, AngelouEconomics has separated the targets into five industry groups, although there is a strong degree of mutual dependence between industries given the significant overlap between with regards to services, production, and research and development. These symmetries and intersections should be seen as fundamental assets to West Des Moines, potentially maximizing the return on investments.

WEST DES MOINES TARGET INDUSTRIES AND NICHE SECTORS



WEST DES MOINES TARGET INDUSTRIES OVERVIEW

The figure above highlights the target industries, local functions (symmetries as described above), and niche sectors. AngelouEconomics does not recommend that niche sectors be identified specifically as “targets.” Clearly, this would yield too many targets, and the synergies between them would be lost. Grouping niche sectors within main heading “targets” can yield many positive results and streamline the marketing and internal product improvement efforts.

A NOTE ON RENEWABLE ENERGY

With some of the nation’s largest wind resources, growing wind farms and supporting manufacturing facilities, Iowa is already staking a claim in the growing renewable energy sector. While West Des Moines will not likely be a leader in large-scale wind generation (given its geographic location in the state) or component manufacturing (given the competition from other regions north); given its location, workforce, and friendly business climate, it can support wind and other renewable energy sources (i.e. biomass), for example, through smaller advanced manufacturing, supply chain activities, and plant science research and development. Overall, this sector does not rise to the level of a “target industry” for West Des Moines, but more of a niche sector within Life Sciences and Advanced Logistics & Manufacturing. This will be explained in more details in the following section.

TYPES OF TARGETS

Finally, one additional critical point with regard to West Des Moines’ five target industry opportunities: given the varying degrees of “success” the city has already had with attracting firms within these industries, West Des Moines’ approach to further building these clusters and their niches will be very different. The different types of targets are summarized here:

- “Core Targets.” These are industry clusters in which West Des Moines currently enjoys a regional and, in some cases, a national specialization. Primary objectives include *retaining* these industries and ensuring a support structure exists (e.g. capital, workforce development, etc.) to grow new small business spin offs and entrepreneurship opportunities – especially those that are built upon innovative technological applications.
- “Diversification Targets.” These are industry sectors that are growing nationally and in which West Des Moines and its land availability, growing/aging population, and educated workforce, is currently well-suited to take advantage of in the future. They provide a critical opportunity for the city to diversify its industry portfolio in the short-term.
- “Emerging Targets.” These are emerging industries nationally (and regionally in some cases) that are growing and provide high wage job opportunities. West Des Moines does not currently enjoy a specialization in these sectors yet, but with additional support structures in place, these are attainable in the longer-term.

WEST DES MOINES TARGET INDUSTRIES OVERVIEW

Core Targets	Diversification Targets	Emerging Targets
<p>High local concentration in WDM, driven by local and regional demand; industries expected to continue to grow.</p> <p>Will need critical support structures (e.g. capital, skilled workforce, customer base). Small business spin offs/entrepreneurship can be a focus.</p> <ul style="list-style-type: none"> • Financial Services/Insurance • Retail/Hospitality • Information Technology (Financial services, web development, technical support) • Life Sciences (Health Services) 	<p>Sectors expected to continue to grow nationally; WDM well positioned to nurture these industries and diversify portfolio.</p> <p>Educated workers, infrastructure and land around Highway-5 are critical to these sectors that can help WDM create a more “global” presence.</p> <ul style="list-style-type: none"> • Advanced Logistics (Global supply chain management) • Life Sciences (Health care IT/Back Office) • Information Technology (Software development, data centers) 	<p>Small to no concentration locally yet but growing nationally/regionally and expected to continue (although unclear how fast)</p> <p>Requires new programs and strong relationships with regional R&D universities</p> <ul style="list-style-type: none"> • Advanced Logistics/Manufacturing (Equipment/component manufacturing for renewable energy, medical supplies) • Life Sciences (Agri-based bio-sciences R&D and testing)

The following pages will provide more depth and analysis within each target industry. For each target, we identify and define the industry and niches, outline national and local industry growth trends, identify local assets and challenges in supporting the target industry, and discuss location criteria and industry requirements. Employment and wage data from the Bureau of Labor Statistics are not available at the city level. Therefore, the information presented in the local industry profiles is based on the aggregate of Polk and Dallas Counties.

Importantly, this document is not meant to be an exhaustive analysis of West Des Moines’ strengths in the target industries, but rather is intended to inform the city of the trends, nuances, and location criteria of the industries in order to better position it to recruit and retain companies within the target industries.

TARGET INDUSTRY PROFILES: FINANCIAL SERVICES / INSURANCE

FINANCIAL SERVICES / INSURANCE

INDUSTRY DEFINITION

The financial services and insurance industry is comprised of commercial banks, savings institutions, credit companies, investment and brokerage houses, financial leasing firms, and insurance companies. Financial service providers include equipment leasing companies, brokerage and investment banking firms and back-office credit operations. Insurance services firms include companies that provide coverage for health care, homeowner, automotive, life, property/casualty and reinsurance liability and protection.

NATIONAL INDUSTRY OVERVIEW

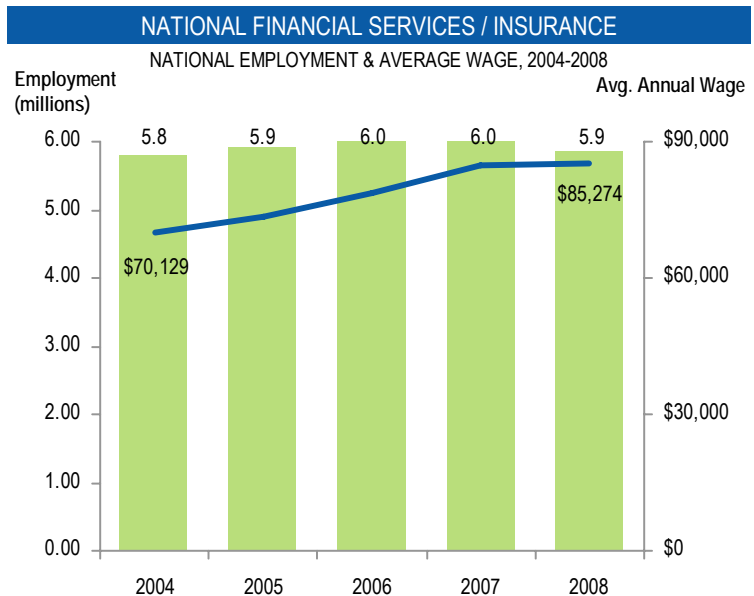
Over the past decade this industry had been a significant growth sector until the 2008 global financial crisis and ensuing recession. Bank lending has slowed drastically and confidence in the sector plummeted as banking bailouts totaling over \$2 trillion started in the U.S. and spread to the European Union and around the globe. Major industry transformations included investment banking leader Lehman Brothers filing for bankruptcy, Merrill Lynch being bought by Bank of America and both Goldman Sachs and Merrill Lynch becoming bank holding companies. The industry has shed more than 250,000 jobs since the summer of 2008.

While the extent of the bailouts highlights major flaws in the financial system, the fact that the bailouts were provided speaks to the importance of financial services to the workings of our economy.

As is true for many of today's fastest growing U.S. industries, the performance of the financial services and insurance sector will continue to rely heavily on innovation – and the crisis will likely result in new regulatory institutions, consolidations, and technological advances from which many new sub-industry opportunities will arise.

However, in the shorter-term many firms are refocusing on improvement within traditional, straightforward products and services in both the retail and corporate sectors.

FINANCIAL SERVICES / INSURANCE	
SECTOR COMPONENTS	
<i>NAICS</i>	<i>Description</i>
521	Monetary authorities - central bank
522	Credit intermediation and related activities
523	Securities intermediation and related activities
524	Insurance carriers and related activities
525	Funds, trusts and other financial vehicles
EMPLOYMENT	
•Total Dallas/Polk County Employment (2008): 46,760	
•Total National Employment (2008): 5,856,864	
•% Local Employment Growth ('04-'08): 11.7%	
•% National Employment Growth ('04-'08): 0.7%	
LOCATION CRITERIA	
<i>Assets that are important to businesses in this industry when choosing where to locate.</i>	
•Educated workforce	
•Quality office space	
•Affordable utilities	
•Availability of capital	
•Workforce development programs	
•Quality of life amenities	



Source: Bureau of Labor Statistics QCEW

TARGET INDUSTRY PROFILES: FINANCIAL SERVICES / INSURANCE

This industry has a diverse range of subsectors, some of which are expected to fare better than others in the coming years. While bankers, brokers and asset managers have been hardest hit and expect more hard times on the horizon, insurers have been challenged but are cautiously optimistic about the future environment for their industry. Concerns over potential over-regulation permeate every branch of the industry as does the belief that the period of consolidation will continue in the short term. It is also expected that firms will greatly reduce expansion activities and instead, more effectively target their existing markets.

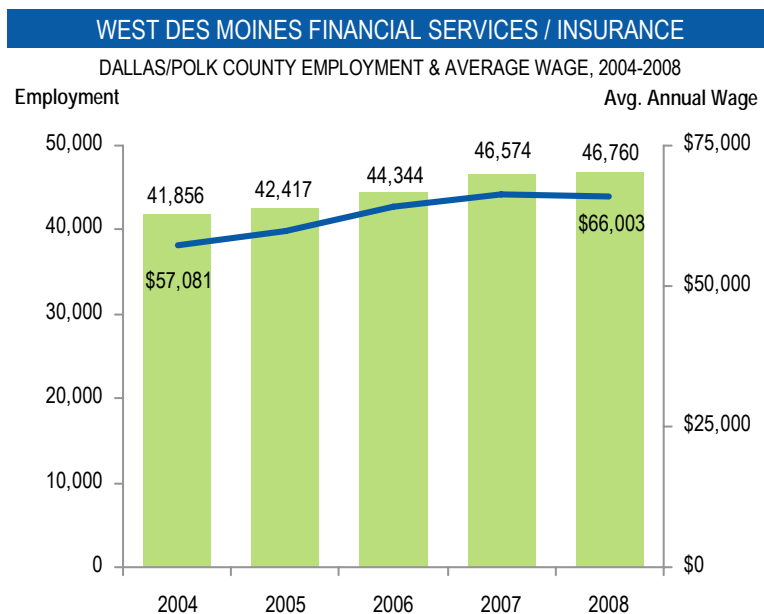
Generally speaking, financial activities employment is expected to bounce back, if at a slowed pace, once the recession ends. Banking employment had been on pace for 4 percent growth over the next seven years and insurance employment by 7 percent.

LOCAL INDUSTRY OVERVIEW

With Wells Fargo, Farm Bureau Insurance & Financial, American Equity, Guide One Insurance, MetLife and Aviva, financial services and insurance are a major part of the local economy of West Des Moines and the greater region. More than 100 insurance companies have either their corporate headquarters in the region or a regional or state operation. Five of the ten largest employers in West Des Moines are financial services/insurance companies and about one third of the jobs in the city are in this industry.

As competition for new business locates (across industries) has become tighter nationally, West Des Moines continues to land new projects including three completed Wells Fargo campuses (in home mortgage and card services), accounting for over 4,500 jobs and an Aviva site, home of 1,500 employees. As the industry, nationally, continues to experience consolidation activities West Des Moines will likely benefit from its competitive cost structure.

With an existing industry base, strong office market, (even during the recessionary period), inexpensive operating costs (compared to other finance and insurance industry hubs), and influx of higher-end retail centers, the city continues to position itself to benefit from future relocation projects. Focus for West Des Moines' economic development efforts, then, can also be retention/expansion efforts – ensuring the necessary 'climate' and support structures (e.g. capital, workforce development, infrastructure, quality of life) are in place to continue to make the city a desirable location for the major corporate operations, while at the same time seeking to facilitate spin-off small business and entrepreneurial activities that support the sector (i.e. financial service back office, IT, etc). This particular entrepreneurial 'niche' provides an important growth opportunity for West Des Moines.



Source: Bureau of Labor Statistics QCEW and US Census QWI

TARGET INDUSTRY PROFILES: FINANCIAL SERVICES / INSURANCE

RECOMMENDED NICHE SECTORS

Subsidiary Support Services

The subsidiary services industry is comprised of third-party support operations including software development, out-sourced administrative functions, and data processing and storage.

Support staff in the financial services industry performs a variety of record-keeping duties. They track revenues coming into and leaving organizations as well as provide customer support. They provide payroll, procurement, and auditing services for their clients. BlueCross BlueShield, UnumProvident, and CIGNA all utilize subsidiary companies to perform some of their functions.

IT/Back Office

The growing financial services and insurance industries will require increasing levels of back office support. Both industries will continue to move support functions off site or even outsource the operations to third party vendors. The fact that some back-office operations still exist in the high cost areas such as New York illustrates the potential for lower-cost communities to recruit these facilities.

LOCATION CRITERIA

Location criteria are assets that are important to business in this industry when choosing where to locate.

For the financial services / insurance industry, firms look for an area with a well-educated workforce and additional programs available for workforce development specific to the skill sets in demand in this industry. Communities should have existing high quality office space, affordable utilities and quality of life amenities, such as retail, recreational facilities and entertainment venues. The accessibility of capital and access to major airports is also important to financial services / insurance firms.

The following sections, on assets and opportunities & constraints, evaluate how well West Des Moines meets these general criteria.

LOCAL ASSETS

Existing employment base

Five of the ten largest employers in West Des Moines are financial services and insurance companies; and, with a location quotient of 3.98, it is the most concentrated industry cluster in the city, accounting for 15 percent of jobs.

Excellent office space and transit access

Financial support organizations (e.g. back office/IT) often look to smaller metro areas when relocating and the availability of high-quality office space and large campus tracts is a major asset for West Des Moines in continuing to grow this cluster. The city's strong office market (even in the face of the current recession) will continue to position West Des Moines on top of site selectors' lists within this industry.

In addition, with the Des Moines International Airport only six miles away and some of the shortest commute times in the country, the city continues to be a desirable place for the industry's workforce including traveling executives.

Competitive cost environment

Not only does West Des Moines offer inexpensive utilities and low wage levels that are attractive to this industry, but in a time of economic volatility, a consistently stable market (i.e. lower unemployment rates than the rest of the country with few peaks and valleys).

TARGET INDUSTRY PROFILES: FINANCIAL SERVICES / INSURANCE

Supportive structural assets

Industry firms require reliable, affordable power, telecom and other ISP services. Not only are West Des Moines' utilities generally less expensive than other major financial service/insurance hubs, but the city has a strong reputation for meeting company's communications (and other) infrastructure needs quickly. Tax Increment Financing programs continue to be utilized for roadway infrastructure support.

Highly educated population

The population of West Des Moines has a high level of educational attainment. Fifty percent of adults have a bachelor's degree or higher, much higher than in-state, regional or national figures. This is particularly critical because this industry consists of many occupations that require postsecondary degrees (e.g. managerial, sales agents, loan officers, etc.).

Proximity to educational institutions offering business programs

The region includes a number of postsecondary institutions with business and finance programs. Drake University has undergraduate majors in actuarial sciences and finance international business and management; and graduate degrees in business through the College of Business and Public Administration. The DMACC West campus offers a business administration college transfer program, as well as a partnership between DMACC and Grand View College that allows students to work towards an associate's degree and a bachelor's degree in business administration simultaneously. William Penn University's College for Working Adults has a location in West Des Moines and offers business coursework and degrees. In addition, West Des Moines is only an hour away from Iowa State University and two hours from the University of Iowa.

LOCAL CONSTRAINTS AND OPPORTUNITIES

Identifying existing business needs in the current downturn

While the financial services industry in West Des Moines has fared remarkably well during the recession, nationally the industry has been losing jobs each month since August of 2007 (even before the national downturn). This year alone, the financial services industry has shed 252,000 jobs nationally. Clearly, this trend speaks to the need for the city to diversify its economic base to insulate itself from further future 'shocks.' Business attraction efforts will continue to be important, but the city must ensure that all retention and expansion programs are enhanced to clearly understand which programs (workforce, technology transfer, capital, etc) are most important to keeping existing companies operating efficiently.

Meeting specific occupational needs

While West Des Moines is positioned to recruit back office operations that do not require a highly skilled workforce, much of the future growth in this sector will require high levels of educational attainment. Therefore, a sustainable strategy of economic development that focuses on primary professional services and back-office facilities must include a long-term commitment to maintaining an educated workforce.

Discussions with local industry leaders identified specific occupations that are expected to grow within the region – and in which the region is not currently producing enough. Examples of occupations in which a shortage is anticipated include risk management officers, financial managers, and systems architects. The city will need to work to ensure K-12, post-secondary institutions, and job training programs are aligned to meet these workforce needs (see page 37 for more analysis). Employee training is often cited as one of the top three major expenses for firms within this sector.

Tax costs/regulations on firm start-up

Because many of the support firms in this industry are likely to be small, tax costs and regulations are important to ensure that services companies are not disadvantaged under the law. Sometimes this burden may be prohibitive to entrepreneurs and, if so, will discourage business investment in the region as a whole. With a base of smaller IT

TARGET INDUSTRY PROFILES: FINANCIAL SERVICES / INSURANCE

firms servicing the financial services/insurance industry, West Des Moines can focus upon growing and maturing smaller spinoffs and entrepreneurs within this sector by developing social/capital networks and facilitating the flow of seed and long-term venture capital.

Enhancing quality of life opportunities

This is an industry that is comprised of many young, highly educated and white collar workers (e.g. financial analysts, credit analysts, accountants, financial managers, etc.). For these individuals, quality of life issues matter significantly. Ensuring adequate recreational- and green-space, localized retail options, and arts & culture opportunities, in particular, will be important to continue to draw a workforce that is required as these firms grow.

High Cost Air Fare

While the Des Moines International Airport is close by, the airport's limited in bound and outbound flights and high air fares can be a constraint for attracting firms in this industry where executives often travel frequently.

FINANCIAL SERVICES / INSURANCE CORE TARGET

VALUE PROPOSITION

With an existing industry base, strong office market, (even amidst the economic downturn), inexpensive operating costs and influx of higher-end retail centers, the city continues to position itself to benefit from future relocation and expansion projects. In addition, a strong K-12 system and proximity to institutions such Iowa State, Drake University, and DMACC provide the city with a foundation to continue to build a qualified pool of talented business management professionals.

WDM ECONOMIC DEVELOPMENT ACTIVITY PRIORITIES

- Business retention and expansion
- Entrepreneurship/Spin-off support
- Business attraction
- Enhancing the 'product' to meet future demand (e.g. ensuring specific occupational needs are met, quality of life amenities are enhanced)

TARGET INDUSTRY PROFILES: RETAIL / HOSPITALITY / LEISURE

RETAIL / HOSPITALITY / LEISURE

INDUSTRY DEFINITION

The Retail/Hospitality/Leisure industry is defined as both the sale of goods directly to consumers as well as the accommodations, entertainment, and recreation opportunities to tourists, visitors, as well as residents.

NATIONAL INDUSTRY OVERVIEW

The retail and hospitality industry has been slowed significantly by the national economic downturn; sales have suffered as consumers face job losses and remain constrained by the credit crunch. Nationally, retail has shed over 250,000 jobs in 2009. Month-to-month retail sales have been up and down for the first half of 2009 suggesting that the industry will continue to face volatility and still may not yet have hit bottom.

The down economy and weak revenue projections have similarly hurt the hotel and entertainment industry, as consumers and corporations continue to trim costs and hold back on booking leisure and business trips. Add in the rise and fall of energy prices (forcing airlines to raise fares and cut capacity) and the past 18 months have been extremely difficult for this sector nationally. However, most economists anticipate the worst of the recession to be over at this point and expect consumer spending and travel to rise, albeit at a slow pace for the next one to two years. Overall, this \$1.4 trillion sector will always be susceptible to fluctuations in the economy. However, it will continue to experience net growth.

Outside of employment trends, the retail sector, specifically, continues to transform itself, as tenants seek greater visibility and brand awareness in a heavily saturated retail market. Real estate development and mixed-use construction are becoming an integral part of many retailers' growth plans.

In addition, as demand for both leisure and business travel had been rising, the hotels and tourism industry has been keying in on new hotel brands, particularly in the high-end hotel market and conventions centers (attendance at large convention centers increased by 17% during the early and middle parts of the decade). Nearly 137,000 hotel rooms began construction in 2006, marking the highest number of construction starts since 1994, according to PricewaterhouseCoopers.

RETAIL / HOSPITALITY / LEISURE

SECTOR COMPONENTS

NAICS Description

- 44-45 Retail trade
- 7139 Other amusement and recreation industries
- 721 Accommodation
- 722 Food services and drinking places

EMPLOYMENT

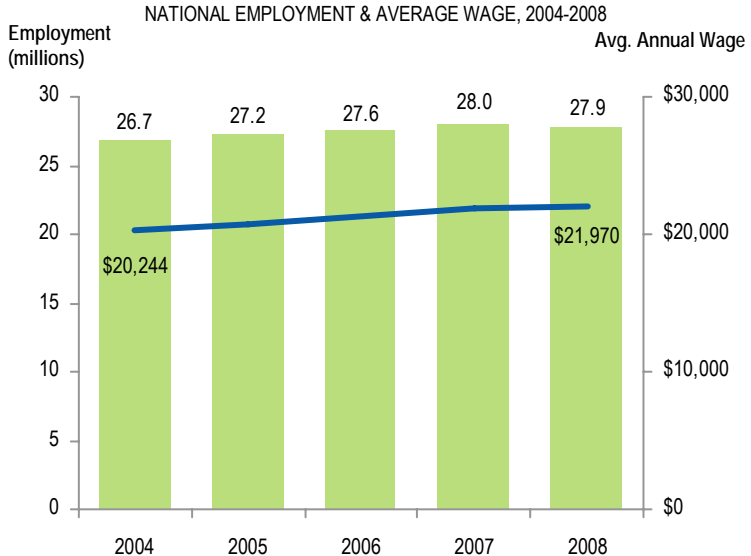
- Total Dallas/Polk County Employment (2008): 59,295
- Total National Employment (2008): 27,849,580
- % Local Employment Growth ('04-'08): 4.9%
- % National Employment Growth ('04-'08): 4.2%

LOCATION CRITERIA

Assets that are important to businesses in this industry when choosing where to locate.

- Tourism / retail destination
- Small business / retailers network
- Quality retail and commercial space
- Area aesthetics

NATIONAL RETAIL / HOSPITALITY / LEISURE



Source: Bureau of Labor Statistics QCEW

TARGET INDUSTRY PROFILES: RETAIL / HOSPITALITY / LEISURE

LOCAL INDUSTRY OVERVIEW

In 2004, the Jordan Creek Town Center shopping mall and West Glen (a mixed-use development) opened in West Des Moines, cementing the city's status as a major retail destination with a significant regional draw (currently the highest in retail sales per capita in the state). The growing retail sector has spurred not only job creation within the industry, but has also led to more jobs in the hotel and leisure industry as major hotel chains have opened to meet the demand of the increasing numbers of visitors.

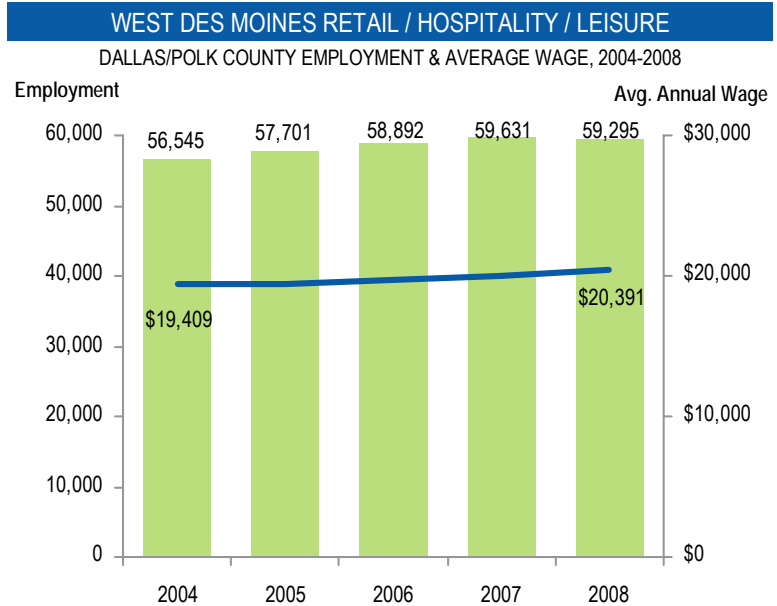
Intra-regionally, West Des Moines dominates the Western Suburbs submarket of Des Moines in retail space inventory. In fact, West Des Moines' regional mall retail space makes up 46 percent of all Greater Des Moines regional mall square footage. Despite the economic downturn, new inventory has continued to come online and as a result, occupancy rates are suffering, especially in neighborhood and community centers.

While the Des Moines region has fared relatively well during the current economic downturn, retailers, lodging, and leisure leaders in West Des Moines have felt the impact of the current economy on their sales and point to anecdotal evidence of cutbacks in corporate spending on food, travel and entertainment. Area retailers reported that while foot traffic has remained stable, there is generally less money spent per trip. Many shoppers in West Des Moines are coming in from surrounding areas, many of which have been hit harder than West Des Moines itself and this too has had a negative impact on retail sales in the past year.

Even with the downturn, this industry remains a critical "core target" for West Des Moines. For many communities, the retail and hospitality industry is generally considered a locally serving sector that lacks a large-scale economic impact. However, for West Des Moines, because it has reached a critical mass and become a regionally-serving market, targeting this industry serves two primary purposes: 1) to provide the quality of life amenities that are important to build a healthy community and to attract the necessary workforce required by the other target industries; 2) to provide an injection of outside dollars into the city and becomes an important contributor to the tax base and thus a key contributor to the provision of city services.

Given the rising population and very high median income levels in the region, this industry will continue to be an important sector for West Des Moines. The city's economic development efforts to support the continued growth of this industry should be around several key areas:

- Supporting existing centers (through promotional efforts, better connection together, bringing in more event "draws," and revitalizing older commercial centers).
- Adding more arts and cultural opportunities and identifying any niche gaps that are not currently being served in the city's market.



Source: Bureau of Labor Statistics QCEW and US Census QWI

TARGET INDUSTRY PROFILES: RETAIL / HOSPITALITY / LEISURE

RECOMMENDED NICHE SECTORS

Full-Service Hotels

Currently there is the potential for oversaturation not only in the retail sector, but also in the hospitality industry as most of the new hotel rooms that came available in 2009 are in mid-market, national chain hotels with similar amenity offerings. In the shorter-term there may be room in this market for more full-service hotels with expanded amenities, most importantly conference room space that draw business visitors and enhance occupancy rates across lodging venues.

Specialty Retail

Specialty retailers sell one type of product, as opposed to department stores that sell many different kinds; they offer a much larger selection of items within a product category. While many major national brands now have a presence in the area, there is an opportunity to expand specialty – and locally owned – boutiques. Many residents, through surveys and focus groups, identified this, in particular, as a crucial gap, wanting to ensure the city maintains some “unique” and localized qualities.

While specialty retail encompasses many merchandise categories, a few popular types include apparel, home accessories and arts & crafts. Because they cannot compete on price with large-scale operations, boutiques offer more personalized service and one-of-a-kind, often customized merchandise. Unlike national chains that sell the same merchandise throughout the country, many boutiques are region-specific, for example specializing in lowa-specific goods. Many specialty retailers cater to tourists.

Arts / Cultural Enterprises

Arts and cultural enterprises encompasses a number of business and non-profit activities like art schools and galleries, music venues, museums, performing arts centers and artist studios. These kinds of activities are important because they can boost interest in the city as a destination – most importantly for young professionals seeking quality of life elements.

LOCATION CRITERIA

Location criteria are assets that are important to business in this industry when choosing where to locate.

For the retail / hospitality / leisure industry, employers look for an area that has a growing population, high incomes and easy transportation access. The community should also possess a small business / retailers' network and quality retail and commercial space available.

The following sections, on assets and opportunities & constraints, evaluate how well West Des Moines meets these general criteria.

LOCAL ASSETS

Demographics that support a growing market

A median household income of \$66,500 and rapidly rising population make the city a perfect location for retail centers. Restaurants and hotels, in West Des Moines, not only benefit from high discretionary income and increased rooftops, but from the influx of corporate campuses that continue to emerge.

City serves region and national market

While the population of West Des Moines is about 55,500, the city's daytime population is over 115,000 thanks in no small part to the 42,000 visitors and non-resident shoppers who come in to the city to shop, visit friends and

TARGET INDUSTRY PROFILES: RETAIL / HOSPITALITY / LEISURE

family and conduct business. Jordan Creek Town Center has played a large part in transforming West Des Moines into a retail destination and other retail centers, both new and existing developments, have added to the success. The availability of retail and dining options attracts visitors from across the state as well as surrounding states. Many national hotel chains have opened locations in West Des Moines to accommodate the traffic generated by retail attractions; in 2008 alone, 2000 new hotel rooms went on offer, according to one source.

Small events support a local draw

The Historic Valley Junction commercial center is home to over 150 shops and restaurants and preserves the story of the city's heritage. Throughout the year, Valley Junction hosts a weekly farmers market and a number of other cultural and community events, such as Music in the Junction. Other cultural and recreational events built around the Jordan Creek shopping center, the Hy-vee Triathlon and Raccoon River Park also provide opportunities to draw residents from the surrounding area.

Robust infrastructure

The infrastructure needs of hotels and restaurants (highway access, available parking, cheap and accessible utilities) are critical to the performance of these industries and West Des Moines has been proactive in working closely with developers to provide these services.

LOCAL CONSTRAINTS AND OPPORTUNITIES

Revitalizing older commercial centers

Redevelopment and revitalization of older commercial areas should be an important component of the city's economic development efforts, especially as a tool to promote small businesses and attract young professionals. As the city continues to support and promote Valley Junction's redevelopment and preservation as a local destination, other sites, such as Clock Tower Square and Governors Square can also ultimately be an important part of the city's efforts. Occupancy rates in these centers are, in many cases, much lower than Jordan Creek and much of their facades need revitalization. Enhanced façade improvement programs and additional tax rebate efforts may be required.

Creating a larger draw for business travel

Many of the hotel and retail and leaders in the community relayed a fear of market over-saturation (becoming clearer, at least, in this down economy). While hotel data still shows high occupancy rates, as the recession plays out, much of the industry economic development focus for the community will be in identifying specific niche 'gaps' that may need filling (see full-service hotel and convention centers niches above). This type of space does not exist in West Des Moines and could support the growing financial services and health care industries.

Support for local retailers and additional culture and arts

Despite the wealth of retail offerings, community stakeholders spoke overwhelmingly about the need for more arts and cultural opportunities in the city as a means of attracting more young adult residents. Report #1 highlighted a particular difficulty in attracting and retaining recent college graduates (although much better success with thirtysomethings) to/in West Des Moines. Studies show that quality of life factors (green space, nightlife, cultural events, and locally-owned retail businesses) are increasingly more important to recent college graduates. The perception of West Des Moines, among young people, is generally that of a standard suburb – a nice place to raise a family, with convenient big-box shopping options, chain restaurants, and plenty of white collar jobs. While West Des Moines will never “compete” with downtown Des Moines for certain cultural activities, the city may wish to consider a performing arts center, a mix of more unique retail offerings, and additional festivals (specifically targeting twentysomethings) that support downtown events as a means of enhancing the quality of life, and thus, economic development in the region.

TARGET INDUSTRY PROFILES: RETAIL / HOSPITALITY / LEISURE

Disconnect among existing centers

With such a strong commercial foundation, the city, through its visitor's bureau, may wish to do more to connect shopping centers. More cross-promotional efforts and branding may be beneficial. In addition, retailers and hospitality professionals raised the possibility of a public transit option (trolley or bus) linking retail complexes as a means to maximize visitor exposure. On a broader level, community survey respondents identified a strong need for expanded public transportation options between West Des Moines and downtown.

RETAIL / HOSPITALITY / LEISURE CORE TARGET
VALUE PROPOSITION With Jordan Creek Town Center shopping mall, West Glen, and an array of business-class hotels, West Des Moines is now serving a substantially diverse local, regional and even national market (the latter of which is primarily tied to the growth of the financial services sectors). Intra-regionally, West Des Moines dominates the western suburbs submarket in retail space inventory. Given the rising population and very high median income levels in the region, this industry will continue to thrive serving as both a quality of life enhancement as well as a critical contributor to the city's tax base.
WDM ECONOMIC DEVELOPMENT ACTIVITY PRIORITIES <ul style="list-style-type: none">•Business retention•Building revitalization•Creating more destination opportunities (events, conference centers)•Supporting cultural/arts (including locally-owned retail) amenities

TARGET INDUSTRY PROFILES: INFORMATION TECHNOLOGY

INFORMATION TECHNOLOGY

INDUSTRY DEFINITION

The information technology industry is comprised of computer programming services, prepackaged software, data processing, information retrieval services, website hosting, internet service providers, telecommunications and computer systems design.

NATIONAL INDUSTRY OVERVIEW

Information technology firms now have worldwide revenues in excess of \$200 billion. Approximately half of these sales come from software applications. Development tools, infrastructure software and computer systems components share the remaining market.

Major areas of growth in the IT and software design sector include data security and business intelligence software. Due to the low start-up costs associated with software firms, many small software companies exist. However, the sector is quickly maturing, and current market trends are precipitating consolidation. Large software companies such as Microsoft, IBM and Cisco have already undertaken significant consolidation actions.

Other major trends in the information technology and software design sector include outsourcing programming duties to low-cost regions and the “open source” movement. China, India, and Russia have low-cost computer scientists, ensuring further investment in these regions. The “open source” movement has gained momentum allowing free access to the building blocks of a computer program, which in turn allows more tools with which to build software. This allows for more effective and innovative programming.

As a consequence of these national and global trends, national software design employment is rebounding from its tech bust in 2001. While more than 460,000 jobs were lost over the past 6 years, most of these losses occurred between 2001 and 2004. From 2004 through 2008, the sector had added jobs nationally, increasingly in more creative software design sectors such as video gaming.

The growth of IT spending has slowed over the decade and the recent downturn has certainly impacted specific sub-sectors. However, employment for “green” IT, netbooks,

INFORMATION TECHNOLOGY	
SECTOR COMPONENTS	
<i>NAICS</i>	<i>Description</i>
5112	Software publishers
517	Telecommunications
5181	ISPs and web search portals
5182	Data processing, hosting and related services
519	Other information services
5415	Computer systems design and related services
EMPLOYMENT	
•Total Dallas/Polk County Employment (2008): 8,470	
•Total National Employment (2008): 3,250,760	
•% Local Employment Growth ('04-'08): 13.7%	
•% National Employment Growth ('04-'08): 3.25%	
LOCATION CRITERIA	
<i>Assets that are important to businesses in this industry when choosing where to locate.</i>	
•Educated workforce	
•Access to capital	
•Research incubator	
•Strong communications infrastructure	

NATIONAL INFORMATION TECHNOLOGY



Source: Bureau of Labor Statistics QCEW

TARGET INDUSTRY PROFILES: INFORMATION TECHNOLOGY

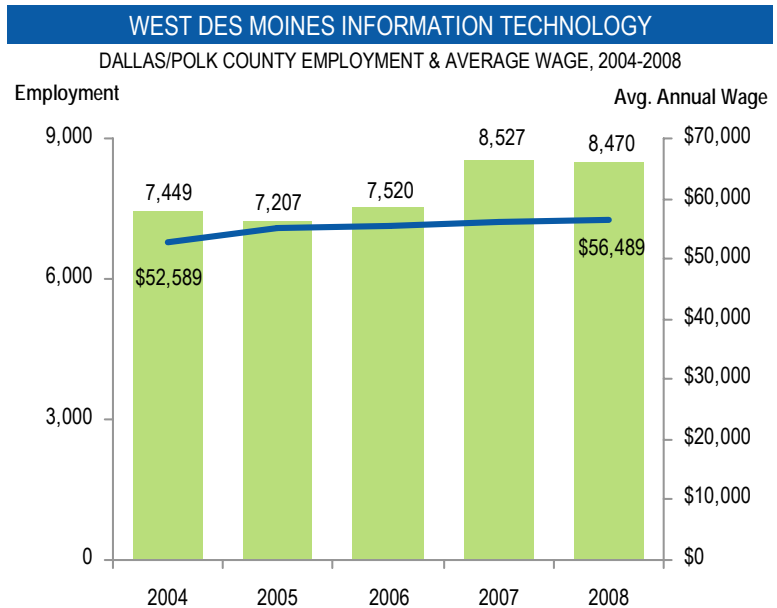
gaming, and some software design is projected to increase over the next few years. By 2014, employment in the software publishing market is expected to jump by 67 percent nationally, representing more than 161,000 new jobs. The computer systems design market will also see significant growth of nearly 40 percent, with more than 450,000 jobs created over the next 10 years. Additionally, as the federal government works to develop national electronic databases of health records, medical IT and data management services will become important sectors.

LOCAL INDUSTRY OVERVIEW

While Cedar Rapids/Iowa City has gained popularity as the “technology corridor” in the state (with strong partnerships between University of Iowa and economic development entities spurring innovation in bio-agriculture, renewable energy, and consumer products), the Des Moines/West Des Moines region continues to build its niche within software development and back office/technical support services for the growing health care and financial industry in the region. As health care expands and the digitizing of medical records and financial service operations becomes more prevalent, West Des Moines is very well positioned to capture market share in technical support services, project management, and web development for Medicare/Medicaid-related and mortgage and credit card contracts. The city already has a growing base of firms that perform these functions. With additional support, West Des Moines may also be able to capitalize more directly on the I-35 tech corridor between Des Moines and Ames which has a growing veterinary science technology presence (*see Life Sciences profile*).

In addition to the software/systems design, and custom computer programming activities, West Des Moines, with its strong infrastructure base and available land, is also well suited for data centers. Although the project has not yet been constructed, the city was recently selected by Microsoft as the site of a \$600 million data center facility. The project would be situated along Grand Ave., where the city is looking to create a local technology corridor. The Greater Des Moines Partnership has identified data center projects as a major shorter-term target for the metropolitan area given the low utility rates and available land. Some regional leaders remain skeptical of these projects for West Des Moines, however, given what they see as a potential low return on investment (i.e. the relatively small number of jobs that data centers generate versus the extremely high amount of energy consumption required).

Overall, although there was some local job loss in the broad information technology industry in 2008 in the West Des Moines region, there has been significant employment growth in this industry over the past five years. There are nearly 8,500 people employed in IT in Dallas and Polk Counties combined. Locally, wages in this industry averaged \$56,489 in 2008 and have grown by 7.4 percent since 2004.



Source: Bureau of Labor Statistics QCEW and US Census QWI

TARGET INDUSTRY PROFILES: INFORMATION TECHNOLOGY

RECOMMENDED NICHE SECTORS

Software Development

The software sector is comprised of computer programming services, prepackaged software, data processing, and information retrieval services. Demand for software is driven by efficiencies derived through computer automation and data management. Potential areas of growth are in gaming, regulatory compliance software, open source software, security software, virus protection software, anti-spam software, and business intelligence software.

Other software opportunities for West Des Moines include mobile devices (iPhone, smart phones), gaming consoles (Nintendo Wii, Play Station, Xbox), and cloud computing, all expected to grow rapidly. To the extent that the city can build the infrastructure and reputation as a technological hub (including close ties to the DMACC West Campus and Iowa State's emerging – but nascent – gaming research), this area has real promise.

Back Office/IT: Health Care and Financial

The financial services and health care industries will require increasing levels of back-office support (see overlapping niche within the Financial Services/Insurance industry). Support staff in the financial services sector performs a variety of record-keeping duties tracking revenues coming into and leaving organizations as well as providing customer support. Back office and accounting services firms are interested in Class A and Class B office space and will invest in updating communications and IT equipment, and will create a number of significant jobs.

Data Centers

Data centers are operations that provide digital information storage for customers and corporate clients. They are composed of clusters of computers and network switching gear that allows efficient and highly reliable transfer of data. Excess capacity exists from the the late 1990s build out, but many corporations have transitioned away from outsourcing data center management and are developing new centers. These facilities are increasing in importance (the number of servers has grown from 2.6 million to 11.6 million in the past decade) and many are co-developed with small software development operations.

Bioinformatics

Bioinformatics is the science of informatics as applied to biological research. Informatics is the management and analysis of data using advanced computing techniques. It is particularly important as an adjunct to genomics research because of the large amount of complex data this research generates. With closer ties to Iowa State, West Des Moines can leverage the master's level research program currently in place in bioinformatics at the Bioinformatics and Computational Biology School. This niche represents the connection between the emerging IT industry and the prospect of building an animal and plant life science cluster. Entrepreneurship will likely drive the development of this niche.

LOCATION CRITERIA

Location criteria are assets that are important to business in this industry when choosing where to locate.

For the information technology industry, firms look for an area with an educated and highly technical workforce, a strong telecommunications infrastructure, access to financial capital and the presence of a research incubator.

The following sections, on assets and opportunities & constraints, evaluate how well West Des Moines meets these general criteria.

TARGET INDUSTRY PROFILES: INFORMATION TECHNOLOGY

LOCAL ASSETS

Educated workforce with technical backgrounds

Areas with an established pipeline of young professionals with advanced degrees in science, technology, engineering and math programs will provide a deep talent base upon which to recruit and nurture high-impact and competitive industries such as IT. The population in the West Des Moines region has high levels of educational attainment (with data showing many with computer software engineering and system administration backgrounds), and access to higher educational institutions both in and around the city.

DMACC West

Located in West Des Moines, DMACC West is a state-of-the-art campus offering a variety of programs with a focus on technology simulation programming and academic areas in Business Information Systems and Telecommunications Technology. The West Campus has partnered with a number of technology-solution providers who rank among the best in their respective areas of expertise. The campus and center will serve as a beta-test site for many of the partners which enables students the ability to not only use and learn on the latest equipment, but also to help develop applications and solutions in a variety of contexts.

Iowa 5 Corridor and access to the Des Moines Airport

Because IT service operations often prefer suburban locations within close proximity to larger client companies, West Des Moines offers a significant market advantage in terms of its position in a major MSA. Large parcels of land along this highway are of strategic importance to West Des Moines because they can accommodate IT and other high-tech facilities including data center projects. The city sees this corridor as playing an important role in future IT-type projects and has zoned for office, business park and light industrial to accommodate industry growth (although specific roadway infrastructure support will be needed). In addition, the highway's connection to the airport is critical providing industry managers and executives important air travel opportunities – increasingly important for this industry sector.

Grand Technology Gateway

West Des Moines envisions a technology corridor along 105th Street, running from south of Raccoon River Rd., intersecting I-80 and continuing north to Hickman Rd., where a future Team Technology Center is slated. The Microsoft data center will also be located in the Grand Technology Gateway.

Direct access to a large and growing customer base

In 2008, there were over 700 IT firms in Dallas & Polk Counties, over half of these were in computer systems and design related services. With a significant concentration of health care facilities and large financial service and insurance operations, a market exists for these services. In addition, a number of major data centers have recently located to Iowa including a \$600 million Google project in Council Bluffs and a \$14 million TEAM Technologies project in Waukee and a \$600 million Microsoft in West Des Moines announced in 2008, reflecting the city's potential.

LOCAL CONSTRAINTS AND OPPORTUNITIES

Access to capital /support for start-ups

The state provides distinct support to nurture the IT industry with various training programs (Management Talent Recruitment Program, IT Employee Training Program, etc). Locally, the city has had success working with the State of Iowa's Economic Development Board to secure funding that would allow for IT company expansions. Despite these assets at the state level, West Des Moines needs to build a support structure for local start-up firms and entrepreneurs in order for the city to fully capitalize on possibilities within the IT sector.

TARGET INDUSTRY PROFILES: INFORMATION TECHNOLOGY

Limited air transportation

While proximity to the Des Moines International Airport is an asset for West Des Moines, the airport is not a hub and experiences far less traffic than other regional airports in the Midwest, such as Kansas City International and General Mitchell International in Milwaukee. Des Moines International has initiated an expansion that includes building an additional runway and acquiring surrounding property; the \$57 million project is not expected to begin until 2011.

Perception of the City as a financial services hub not IT necessarily

West Des Moines is well known for its success in the financial and insurance sector. However, the city and the larger region are not considered a hub for high-tech jobs necessarily yet (even though a base of high-performing IT-based companies is housed in West Des Moines). Future marketing efforts can do more to promote local IT company growth and specific business successes.

Better connect to universities

The city of West Des Moines' relationship with Iowa State University and the University of Iowa will be a critical factor for this industry to grow. At the University of Iowa, researchers are working to develop and use the world's most powerful supercomputer. At Iowa State's Ames Research Laboratory the university conducts innovative materials and high performance computing and analysis research. The city can be a more active player in understanding and leveraging these types of technological innovations and engaging in university technology transfer programs.

INFORMATION TECHNOLOGY DIVERSIFICATION TARGET

VALUE PROPOSITION

A base of smaller IT firms performing project management, web development, and quality assurance for the financial services and health care sectors is currently concentrated in West Des Moines. As the digitizing of health care and financial services and insurance industries continues, West Des Moines can further strengthen its niche. DMACC West, with its IT focus, and the city's existing office space and room for build out along I-5 and northwest (Grand Technology Gateway) provide additional assets for the community and provide a foundation to create a future tech corridor.

WDM ECONOMIC DEVELOPMENT ACTIVITY PRIORITIES

- Business attraction
- Entrepreneurial/small business support
- Stronger connection with University of Iowa and Iowa State to take advantage of innovations (especially around bio-agriculture, renewable energy, and health/financial services)
- Evaluate economic returns relative to data center electricity demand

TARGET INDUSTRY PROFILES: LIFE SCIENCES

LIFE SCIENCES

INDUSTRY DEFINITION

For the purposes of this study, the life sciences industry is defined by two components: 1) direct patient care (hospitals, nursing facilities, medical centers); and 2) the designers and manufacturers of medical/veterinary products and institutions involved with primarily animal and plant science research (i.e. biotechnology). This includes the emerging technological advances and scientific research into genetics and bioinformatics that will increase yields, enhance soil and water quality, and ultimately improve nutrition and health to consumers.

NATIONAL INDUSTRY OVERVIEW

Health Care

Health care is currently the largest industry in the nation and is expected to generate 2.5 million new jobs over the next five years, according to the Bureau of Labor Statistics. In 2007, the U.S. spent more than \$2.26 trillion on health care, more than \$7,400 per person. The health care industry is made up of about 580,000 business establishments and currently employs more than 14.8 million workers in both the public and private sectors.

Currently hospitals make up the smallest percentage of business establishments in the health care industry, but they are the largest employers in the sector. Hospitals, both public and private, are expected to remain major employers, but home health care services are expected to see the greatest amount of growth, with employment increasing by over 55 percent in the next seven years.

Health care reform is a major thrust of President Obama's administration. Because health care legislation is making its way through congress, it remains to be seen just how much federal money will be earmarked for health care in the future, but it will certainly be a sizeable amount. A

critical component of the President's vision for reform is digitized medical records which will reduce costs and potentially increase the quality of care. The massive undertaking of converting all medical records into digital form

LIFE SCIENCES	
SECTOR COMPONENTS	
<i>NAICS</i>	<i>Description</i>
5417	Scientific research and development services
541940	Veterinary services
621	Ambulatory health care services
622	Hospitals
623	Nursing and residential care facilities
EMPLOYMENT	
•Total Dallas/Polk County Employment (2008): 28,327	
•Total National Employment (2008): 14,145,478	
•% Local Employment Growth ('04-'08): 10.1%	
•% National Employment Growth ('04-'08): 10.5%	
LOCATION CRITERIA	
<i>Assets that are important to businesses in this industry when choosing where to locate.</i>	
•Educated / skilled workforce	
•Available venture capital	
•Institutional research presence	
•Affordable lab space	

NATIONAL HEALTH CARE



Source: Bureau of Labor Statistics QCEW

TARGET INDUSTRY PROFILES: LIFE SCIENCES

and making them available over the internet will have serious implications for the health care industry and IT service firms.

Biotechnology

“Bio-agriculture” is an area of potential high growth that applies the genetic and biological research within the biotechnology sector to improving food quality through genetic modification, creating chemical feedstocks, finding new sources for pharmaceuticals, and developing nutraceuticals, essential extracts of nutrients from food products. Similarly, bioinformatic research conducted in the biotechnology and health care sectors help to better understand biological processes and how to make agricultural products and cultivation techniques more effective.

While the broader biotechnology industry has taken a hit in this recession industry experts predict that innovation will continue to be the driving force of job growth once the economy rebounds. In 2007, over \$80 billion worth of R&D funding was invested in food manufacturing and life sciences, with chemical manufacturing alone garnering over \$55 billion.

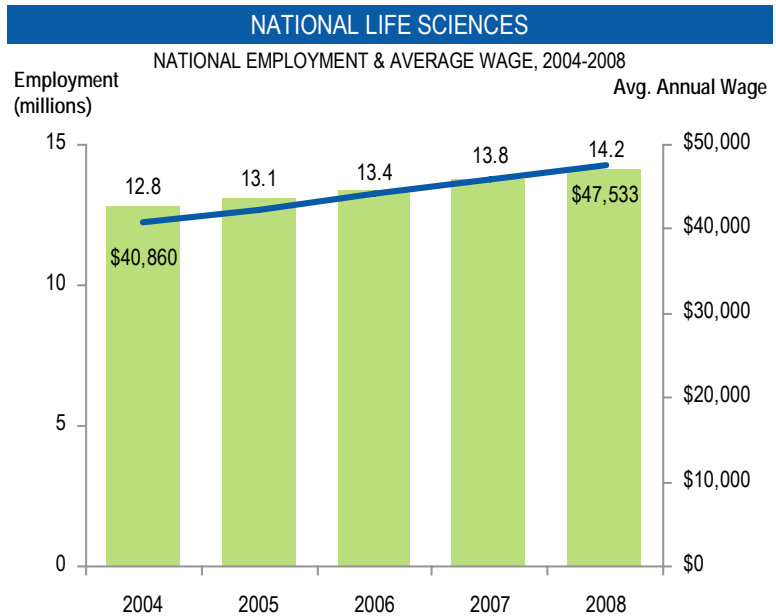
The research, testing & medical laboratories subsector of biosciences, which is the branch of the greatest significance to West Des Moines, is the largest and fastest growing in the industry; the number of business establishments climbed by 33 percent between 2001 and 2006, over twice the amount of growth experienced by life sciences as a whole. This subsector includes both research-oriented companies as well as service-oriented firms.

LOCAL INDUSTRY OVERVIEW

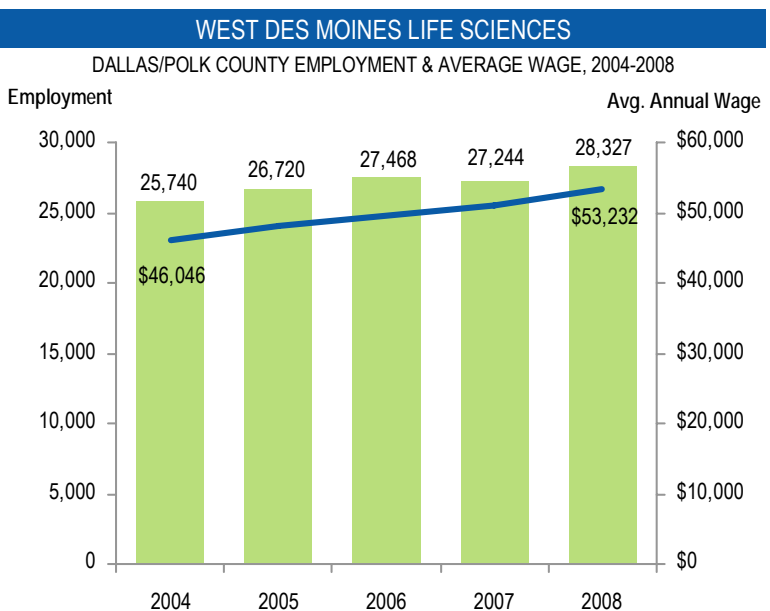
Employment in the life sciences industry has grown steadily over the past five years. There are currently over 28,000 people employed in this industry in West Des Moines. Average wages have also increased locally, reaching \$53,232 in 2008.

Health Care

The health care component of this industry has become an important part of the West Des Moines – and regional – economy because of the opening of two major hospitals, Mercy West Lakes, an 80 bed facility, and Methodist West, a 95 bed facility.



Source: Bureau of Labor Statistics QCEW



Source: Bureau of Labor Statistics QCEW and US Census QWI

TARGET INDUSTRY PROFILES: LIFE SCIENCES

The Iowa Clinic, one of the city's largest existing health care employers, is a large group practice, with over 140 physicians and over 400 total employees. Thirty-seven specialties are represented in this facility which opened in 1994.

Nearby Des Moines University (DMU) is a major medical school offering nine graduate degrees in medicine and health-related professions such as health care administration and public health. With an enrollment of 1700, DMU is the largest medical school in Iowa and one of the top 20 largest in the country. DMU offers a summer research program for undergraduates interested in medicine as well as a summer camp experience for high school students. This university is an important resource for West Des Moines's expanding health care industry.

Two important forces, an aging population and the city's expanding boundaries into the already-growing western suburbs, mean that demand for health care services will continue to grow. The city's base of health care employers, including the two new hospitals, can be built upon by attracting specialty clinics and health care providers that supplement the in-patient care offered by hospitals. Back office IT support is another service that will grow increasingly important as the health care industry grows.

Given the potential for growth and the new local facilities, this represents a critical industry cluster for West Des Moines.

Biotechnology

Much of the corporate animal and plant science R&D and distribution activities in the region occur outside of West Des Moines (including Ankeny and Johnston) along the I-35 corridor.

While not a major player currently, West Des Moines, with its educated and technically-skilled population, available land abutting major interstates, and strong office market, may be able to take better advantage of this industry's opportunities. Developing the appropriate infrastructure (flex/lab space and additional roadway development) and strong connections with Iowa State University (ISU), through tech transfer programs, will be a critical start.

Importantly, most of these life science R&D niche companies are not necessarily major job generators. However, they pay extremely high wages and have the potential to grow over time.

RECOMMENDED NICHE SECTORS

Specialized Health Care Service Centers

Currently, individuals aged 65 and older represent nearly 15 percent of Iowa's total population – a significant portion. As this population – and the region itself – continues to grow, West Des Moines is in position to attract regional medical centers with specialized services that fill gaps not being serviced by the existing and new acute care hospitals in the city. Regional medical centers that offer diagnostics, surgery, and ongoing nursing care, along with specialized pediatric, neuroscience, cancer, substance abuse, or diet control care could be viable niche targets.

Health Care IT / Back Office Services

See description in earlier section.

Equipment/Medical Device Manufacturing & Logistics

The medical device manufacturing sector is expected to greatly benefit from the world's aging population. These demographic changes will greatly increase the demand for medical devices, such as heart pumps and prosthetic joints, that can treat disease and injuries. Medical device firms design and manufacture surgical and diagnostic

TARGET INDUSTRY PROFILES: LIFE SCIENCES

equipment in a field that is closely regulated, research intensive, and has comfortable operating margins. Most inventions occur in research hospitals and universities before being spun off for commercial development. Technology transfer programs and the availability of human and financial capital are paramount in bringing a product to market. Medical logistics functions, on the other hand, comprise an important part of the health care system: after staff costs, medical supplies are the single most expensive component of health care. To drive costs down in the health-care sector, medical logistics providers are adopting supply chain management theories.

Agri-Based Bioscience: R&D and Testing

While it may not be a major hub for biosciences, with the right resources, the city stands to capture biotechnology activities related to plant genomics, biofuel applications (which is tied to renewable energy activities), and other agriculture related subsectors that are currently being researched at Iowa State University. With its location near the airport, strong infrastructure, and proximity to downtown, West Des Moines provides value to research organization, testing, and logistics firms in this sector and may be able to compete with other communities in the region in the future.

LOCATION CRITERIA

Location criteria are assets that are important to business in this industry when choosing where to locate.

For the life sciences industry, employers look for an area with a skilled technical workforce with experience in healthcare, agriculture and technology-related research. Other assets that make a community a strong candidate include available venture capital, an institutional research presence and affordable lab space. Health services firms seek locations with growing and aging populations.

The following sections, on assets and opportunities & constraints, evaluate how well West Des Moines meets these general criteria.

LOCAL ASSETS

Adequate infrastructure and Iowa-5 Corridor

Adequate infrastructure is one of the most critical requirements for health service firms. Traffic congestion should not impede emergency service personnel, a major airport should be nearby for reduced transport time, and telecommunications and energy infrastructure must be adequate – all criteria that the city currently meets. Although health care services must locate in every major market, affordable office space for medical specialists is usually desired.

The Iowa -5 Corridor runs along the southern end of West Des Moines and connects the city with the airport. The availability of land along this corridor combined with the strength of the West Des Moines office market makes this corridor an excellent future site for life science companies that may need flex space or lab configurations that are not currently available in West Des Moines. The Grand Technology Gateway which runs along 105th St. is another area in the city being developed with high-tech companies in mind.

Two new area hospitals

Mercy West Lakes Hospital is a \$100 million project that includes over 80 beds and offers medical and surgical care, intensive care, obstetrical and cardiac services, a 24-hour emergency department, and diagnostic and ancillary services. Methodist West Hospital, part of the Iowa Health network, is a 95 bed hospital offering a full range of medical care services.

Growing and aging population

Health service companies are necessary in most communities. However, markets with a rapidly aging population or other special needs are particularly attractive to health care related businesses seeking an operating location.

TARGET INDUSTRY PROFILES: LIFE SCIENCES

Economic realities have also forced many hospitals to consider area income levels in their site selection decisions. West Des Moines, with its rapidly growing population and high median income levels make it competitive.

LOCAL CONSTRAINTS AND OPPORTUNITIES

Maintaining competitive business costs

Health services costs are extremely high, with training high-turnover staffs, updating aging buildings and equipment, and purchasing new technologies comprising the majority of continuing operating and capital costs. West Des Moines enjoys an advantage in this regard as its real estate costs and tax rates are competitive regionally. It will be critical for the City to maintain this affordability to instill confidence in industry firms that are seeking to keep overall capital costs down.

Lack of linkages to research institutions

The city must take advantage of the bio-agriculture research expertise and potential for commercialization developed through Iowa State University. Iowa State performs over \$200 million in R&D annually in areas such as plant genomics, bioinformatics, veterinary pharmaceuticals, and soil quality through an array of centers and institutes. At the University of Iowa, the Technology Innovation Center offers cost-effective space to new companies and ventures that use advanced technology, including the new University of Iowa BioVentures Center.

Maintaining a skilled workforce

Attracting and retaining a quality workforce is critical in the life science fields. Of the top 25 occupations in the biotechnology industry, only three require less than an associates degree, and 16 require a bachelor's degree or higher. Biotechnology firms employ many life science PhDs, and typically have strong ties to an area research university with graduate life-sciences programs. Health services companies, on the other hand, rely on a variety of trained employees from doctors, therapists, and pharmacists to skilled nurses and technicians. DMACC will continue to play a crucial role in supporting the city's efforts in providing a trained workforce for this sector.

Poor support structure for technology-based companies

Financial needs of the industry are paramount. Biotechnology is an industry in its infancy, still relatively small even after a decade of substantial growth, with fewer than 50 industry companies employing over 1,000 employees and none ranking among the top 25 employers in the largest biotech metros. The City must ensure that funds are available to, in some cases, subsidize R&D expenses. Currently, the region captures limited to no venture capital funding, as identified in Report 1.

Very limited infrastructure assets for life science/tech firms

Life science R&D firms have specific infrastructure needs, including available wet lab space, reliable utilities, and flexible manufacturing spaces, along with access to inexpensive office space. Bio-ag firms may also need access to large-scale bio-repositories where genetic information, animal specimens, and genetically homogenous lines of research organisms can be housed. The typical firms in this sector are relatively small and the majority of any capital investment will be utilized for specific laboratory equipment.

TARGET INDUSTRY PROFILES: LIFE SCIENCES

LIFE SCIENCES

CORE TARGET: Health Care Services

DIVERSIFICATION TARGET: Health Care / IT Back Office

EMERGING TARGET: Agri-based Biosciences

VALUE PROPOSITION

West Des Moines' rapidly growing population, high median income, proximity to downtown Des Moines, network of airport/transportation throughways, and available land, give it a distinct regional advantage for *health service* firms. Two new hospitals means that the city can benefit not just from the larger health services industry, but can leverage its other assets (transportation-related, strong young professional population) to attract specific niche sectors within the industry including medical supply manufacturing and administration and back office support.

With ISU life science research and a growing base of plant science companies in the region, West Des Moines provides excellent nearby value for accelerating startup companies in emerging plant genomics or biologistics opportunities as a *biotechnology/life sciences* tie to the logistics assets.

WDM ECONOMIC DEVELOPMENT ACTIVITY PRIORITIES

- Business attraction & retention
- Entrepreneurship/Spin-off support
- Ensuring adequate lab space exists
- Ensuring specific occupational needs are met (in the health care field in particular)
- May need sector-specific incentives
- Assessing true capability to compete with other regional cities for life science R&D

ADVANCED LOGISTICS / MANUFACTURING

NATIONAL INDUSTRY OVERVIEW

The advanced manufacturing sector is defined by a set of activities that focus on the design, manufacturing, and assembly of complex products utilized in a range of modern industries, including telecommunications, farm equipment, health care, and energy supply. While this industry includes the manufacturing of very different products, they are connected by their technically advanced design, manufacturing, and assembly processes and a common set of workforce requirements, including a dependence on technically trained workers with computer-aided and advanced manufacturing and machinery operation skills.

Advanced logistics is the process of planning, implementing, and controlling the efficient flow of goods and services through the supply chain from producer to consumer. As virtually every product sold in America moves through distribution channels, the industry is responsible for coordinating the transport of one third of the nation's gross domestic product. While the "distribution" component of supply chains will continue to be serviced by "lower-tech" transportation suppliers, including trucks, airplanes, and ships; logistical coordination is a high value-added service that will drive industry growth in coming years. Technical workers dominate employment in this field. It is composed of advanced just-in-time coordination and the related electronic devices, often called "track and trace." Federal Express pioneered the service side of distribution, and more established companies have been racing to catch up.

Market trends such as globalization and outsourcing of logistics services have been a boon to this industry, spiking growth in the early part of the 21st century. These same trends mean that logistics firms have to keep up with the ever-changing, increasingly complex realities of national and international trade routes, networks and operating agreements.

These two traditionally independent industries are being targeted in combination for West Des Moines because of the connections that exist between them including real estate and workforce requirements. However, the greatest synergy between these two industries lies

ADVANCED LOGISTICS / MANUFACTURING

SECTOR COMPONENTS

NAICS	Description
332	Fabricated metal product manufacturing
3331	Ag., construction, and mining machinery manufacturing
3332	Industrial machinery manufacturing
3335	Metalworking machinery manufacturing
334	Computer and peripheral equipment manufacturing
336	Transportation equipment manufacturing
481	Air transportation
488	Support activities for transportation
4921	Couriers and express delivery services
541614	Process and logistics consulting services

EMPLOYMENT

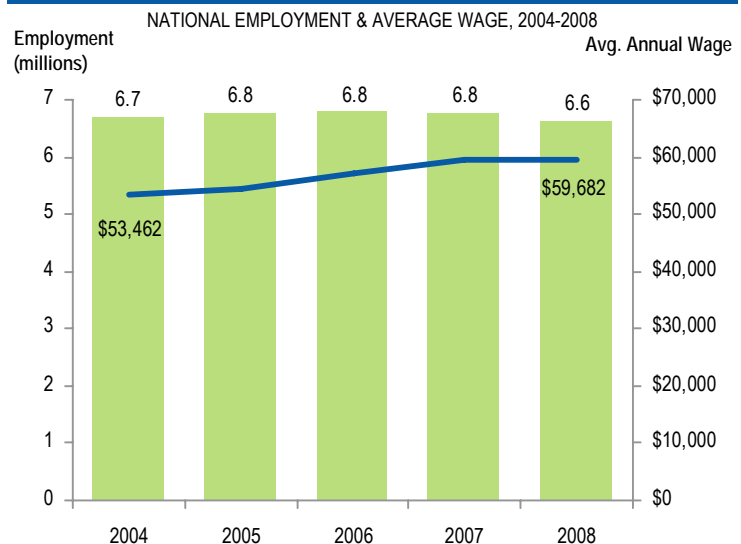
- Total Dallas/Polk County Employment (2008): 8,564
- Total National Employment (2008): 6,631,808
- % Local Employment Growth ('04-'08): 4.2%
- % National Employment Growth ('04-'08): -1.1%

LOCATION CRITERIA

Assets that are important to businesses in this industry when choosing where to locate.

- Proximity to airports
- Access to highways
- Transportation infrastructure
- Well trained workforce
- Low labor costs
- Availability of inexpensive electricity

NATIONAL ADVANCED LOGISTICS / MANUFACTURING



TARGET INDUSTRY PROFILES: ADVANCED LOGISTICS / MANUFACTURING

in their need for innovative technology. Both industries have been completely transformed by high tech advances and both are reliant on future technology development as the key to sustained competitive advantage.

While the overall number of manufacturing jobs continues to contract during the current period of economic recession, a widening skills gap exists as industry employers are having increased difficulty filling positions that require technical expertise and experience. This shortage of skilled labor has placed certain occupations in high demand and has helped fuel wage growth in the sector. Between 2004 and 2008, wages have risen by over 13 percent and the current average wage in advanced manufacturing is well above the combined national average.

LOCAL INDUSTRY OVERVIEW

Currently, the Advanced Logistics and Manufacturing industry does not have a significant presence within West Des Moines, so this becomes an “emerging” target for the city. The city has a small industrial base in the eastern part of the city, running along Lincoln Street south of Railroad Avenue. Goodrich Turbine Fuel Technologies, an aircraft equipment manufacturer, and Windsor Window Company both have operations in this area of West Des Moines and employ over 300 people each.

Given the city’s small industrial presence, high land costs (compared regionally) and relatively high prevailing wages, West Des Moines is not positioned for big machinery and heavy industry manufacturing. Nor is the city suited for large, land-intensive distribution and warehousing companies. Instead, the city’s niche will be in the smaller advanced logistics firms (freight forwarders, global supply chain management firms, etc. that rely upon advanced customized software solutions); as well as the clean IT-driven component and/or medical device manufacturing firms and spin-offs with moderate land requirements.

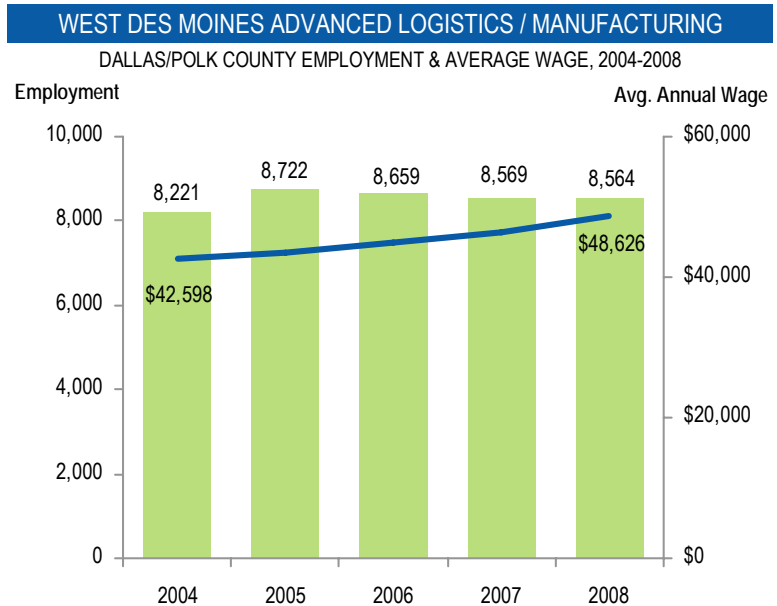
Consistent with national trends, this industry has sustained small levels of job loss locally since 2005. In 2008, there were over 8,500 people employed in logistics / advanced manufacturing in Dallas and Polk Counties combined, earning an average of \$48,626. Wages in the industry have grown consistently and are higher than the national average for all industries combined.

Importantly, city leaders (from both the public and private sectors) expressed interest in building this industry locally as a means to diversify the city’s current economy, which is heavily reliant on finance and insurance.

RECOMMENDED NICHE SECTORS

Freight Forwarding

Freight forwarders provide logistics services to companies of all sizes, routing shipments through third-party transportation modes, including passenger air carriers and air freight lines, oceangoing container lines, intermodal



Source: Bureau of Labor Statistics QCEW and US Census QWI

TARGET INDUSTRY PROFILES: ADVANCED LOGISTICS / MANUFACTURING

rail operations and trucking lines. Freight forwarders dominate the international air transportation markets, controlling more than 85% of the volume of trade flows. Freight forwarders continue to expand into other modes, particularly container shipping via sea. This subsector has grown particularly quickly over the past ten years because of its ties to international trade.

Logistics Systems Design/Supply Chain Management

The logistics systems design and software niche is a growing market that is aimed at optimizing the performance of people, places, and processes (increasing efficiencies in shipping, warehousing, and cargo transportation). One of the key areas of interest is in supply chain management.

This is also where West Des Moines can plug into growing statewide renewable energy sector as nearby wind component manufacturing firms, for example, will rely upon logistics firms to plan for the distribution of high-tech component parts. The city's strong multi-modal transportation network helps serve manufacturing efforts, allowing both the easy import of component supplies and the distribution of these finished products.

Equipment / Component Manufacturing (including renewable energy)

This subsector of advanced manufacturing encompasses the manufacturing of machinery for diverse industries, including farm equipment and metal machinery, and transportation equipment. The metal working machinery subsector is comprised of businesses engaged in manufacturing a diverse range of machinery in processes such as metal cutting, molding, and assembly. These are frequently small, with fewer than 20 workers.

As the state continues to pursue renewable energy projects, West Des Moines, in the longer-term, can seek to attract R&D and small manufacturing operations that are focused on improving turbine component technology and manufacturing and distribution processes through nanotechnology applications, for example (a research focus at Iowa State University).

Composites Manufacturing

Composite materials are scientifically engineered materials formed by mixing at least two constituent materials in order to create a product with highly specific physical properties. Composites have traditionally been composed of polymers and resins produced from petrochemicals and other chemical compounds, but a highly exciting emerging field focuses on bio-composites. Bio-composites are materials formed from natural compounds such as vegetable resin and wood fibers, which are more compatible with living organisms. This emerging sector is particularly exciting due to its ties to the biotechnology and health care fields, where the bio-composites have many applications in gene therapy, tissue engineering, and other medical areas. This field is also expected to grow rapidly as rising fossil fuels prices make traditional petrochemical composites materials more expensive. While composite "hot beds" exist in other parts of the Midwest (southern Minnesota, south central Kansas), West Des Moines can tie closely to Iowa State University's ongoing materials science research as it builds some market share in this high value-add niche.

LOCATION CRITERIA

Location criteria are assets that are important to business in this industry when choosing where to locate.

For the advanced logistics / manufacturing industry, firms seek certain transportation assets such as proximity to airports and convenient access to highways, as well as strong physical infrastructure (e.g. available parcels of land, water capacity) in the community itself. To keep costs down, employers look to locate in areas with low labor costs and the availability of affordable utilities. A well trained workforce is also a major asset.

TARGET INDUSTRY PROFILES: ADVANCED LOGISTICS / MANUFACTURING

The following sections, on assets and opportunities & constraints, evaluate how well West Des Moines meets these general criteria.

LOCAL ASSETS

State, regional, and local tax advantages

The state offers zero property tax on new machinery and equipment for manufacturing and no sales or use tax on this machinery. There is also no sales tax due on electricity and natural gas used directly in the manufacturing process. In addition, West Des Moines has local property tax abatement programs and has worked successfully with the state to help industry firms secure state job training programs aimed at the manufacturing sector.

Supportive infrastructure & available land

West Des Moines has the physical infrastructure to support the advanced logistics / manufacturing industries including a high-quality road network and access to rail and air transportation. The city's infrastructure and central location open these businesses up to the greater Des Moines region, the state of Iowa and the nation as a whole. The city also boasts abundant, affordable energy and water capacity. Another business attraction asset is the availability of land, including large, undeveloped parcels along the Iowa-5 Corridor and the Grand Technology Gateway. However, given land costs, the city's industry niche will be in the smaller advanced logistics firms and spin-off R&D and manufacturing firms with moderate land requirements.

Strategic Location

West Des Moines' location within Iowa and the greater Midwest market is an excellent advantage. Iowa's strategic, central location makes it a natural fit for manufacturing because of the ease with which goods can be transported to other markets. From Iowa, freight and rail shipments can reach vital markets like Chicago, Minneapolis, St. Louis, Omaha and Kansas City in just a few hours. The city also enjoys a superior location in terms of major roadways; being located at cross-section of I-80, I-35, and I-235 provides ease of mobility and access for businesses that need to ship their final product to other places in the region and nation.

LOCAL CONSTRAINTS AND OPPORTUNITIES

Managing the state wage threshold requirement

Through its "wage threshold" requirements, the state will only provide financial assistance (i.e. job training grants, tax credit programs) to firms that provide prevailing wages at or above each county's average wage. Because Polk and Dallas Counties have high average wages, attracting new manufacturing firms may be difficult given their traditionally lower wages. This is, however, why West Des Moines should focus on higher-value-add industry firms that are technology based and require portions of highly skilled and educated labor. In addition, the city may, on a case-by-case basis, wish to negotiate with the state through a waiver or other mechanism to overcome this hurdle.

Higher land costs and limited light industrial capacity

Land costs are higher in West Des Moines than many of the surrounding sub-regions which will be prohibitive to large operations seeking to construct new facilities. This is another reason that the city must have very specific targeting efforts in this industry; many technology based firms in global logistics and advanced manufacturing require smaller footprints than traditional manufacturers.

While there are some areas of land zoned for light industrial, the industrial space is limited in the city. Most of the land in the area where industry has traditionally located, in the east part of the city along Lincoln St., is occupied; there are very few vacant parcels. In first quarter of 2009, there was not a single vacant industrial property in the city. Companies looking to locate in West Des Moines will be challenged to find leasable industrial space and available land that is zoned for light industrial.

TARGET INDUSTRY PROFILES: ADVANCED LOGISTICS / MANUFACTURING

Strengthening connection to R&D institutions

With greater connections to Iowa State and the University of Iowa and various Des Moines-based industry associations, West Des Moines has the potential to be home to research-based companies specifically in bio-agriculture and renewable energy-related technology improvements.

Opportunity for enhanced transportation infrastructure

While the city benefits from its coordinated infrastructure provision and use of TIF districts, there are specific infrastructure concerns (as pointed out in Report #1), namely that “leapfrog development” continues to occur adding to the cost of additional roadways, water, and sewer services.

In addition, the city currently has use of Union Pacific and Iowa Interstate Railroad, Ltd. According to many city stakeholders, these rail assets may be underutilized as an economic development vehicle, for distribution and freight service in particular.

ADVANCED LOGISTICS / MANUFACTURING

DIVERSIFICATION TARGET: Global Supply Chain Management

EMERGING TARGET: Equipment / Component Manufacturing for Renewable Energy; Medical Devices

VALUE PROPOSITION

With its technically-skilled workforce and superior location at the cross-section of three interstates along with the I-5 corridor providing a direct connection to the Des Moines International Airport, West Des Moines provides significant value for advanced logistics and small, higher-tech manufacturing firms that are seeking smaller parcels of land, access to national and international markets, and an educated workforce.

WDM ECONOMIC DEVELOPMENT ACTIVITY PRIORITIES

- Business attraction
- Entrepreneurship/Spin-off support
- Ensuring specific occupational needs are met and quality of life amenities are enhanced
- Building relationship with state universities

OCCUPATIONAL REQUIREMENTS

OCCUPATIONAL AND REAL ESTATE REQUIREMENTS

In addition to the location criteria identified within each target industry profile, the following section provides more detailed information into two important location criteria that are particular critical to West Des Moines efforts to attract and retain these industry clusters:

- Occupational Requirements – the types of occupations and training that are needed within each industry.
- Real Estate Requirements – the type of land designations needed within each industry (to align to the city's current comprehensive planning effort).

OCCUPATIONAL REQUIREMENTS

OCCUPATIONAL REQUIREMENTS

Analyzing the Bureau of Labor Statistics' Occupational Employment Statistics (OES) gives insight into the professions within an industry that are most important. Key occupations are identified by comparing their share of employment within a given industry to their share of total national employment for all industries. This comparison provides a ratio, where higher ratios represent a greater concentration of the occupation in the industry and lower ratios represent a smaller presence of the occupation.

Once the key occupations are identified, they can be assessed for trends in educational requirements, wages both nationally and locally, and projected employment growth.

During a focus group with area employers, certain occupations were highlighted as being in growing demand in West Des Moines – and particularly difficult to fill. These occupations, listed in the box on the right, come primarily from health service, financial service and information technology firms within the city. To be successful, West Des Moines must ensure a pipeline of workers trained in fields across all target industries. Alignment with DMACC, Drake, Des Moines University and other regional and state institutions will become increasingly important.

Hard to Fill Occupations in WDM
<ul style="list-style-type: none">□ Nurse practitioners□ Physicians□ Risk management officers□ Financial managers□ Systems architects□ Database engineers

Data Note: Some OES data is not available on the local level for specific professions; this is indicated by "N/A" in the following charts.

OCCUPATIONAL REQUIREMENTS

FINANCIAL SERVICES / INSURANCE

The following table lists occupational information for the top fifteen occupations in the financial services / insurance industry that are expected to grow nationally. Professions in this industry tend to require a high level of educational attainment; half of the top occupations require at least a bachelor's degree. There are, however, a number of more service-related occupations that require various levels of on-the-job training, allowing for entry into the industry for those without post-secondary education.

Wages in this industry vary quite a bit depending on the particular occupation. Tellers represent the occupation with the lowest wage, averaging \$23,600 nationally, and Actuaries are the highest paid, averaging \$95,400 nationally. Most of the top occupations within this industry are expected to grow in the coming years – a positive sign for the industry itself and for the city. Securities, Commodities and Financial Services Sales Agents, Personal Financial Advisors, Actuaries and Financial Analysts are all occupations that are projected to grow by large margins in the next ten years.

Key Occupations in the Financial Services / Insurance Industry							
Occupation	Employment		Average Wage			Occupational Information	
	Des Moines- West Des Moines MSA	10-year U.S. Growth Projection	US	Des Moines- West Des Moines MSA	Wage Differential	% with Bachelor's Degree+	Education
Insurance sales agents	820	12.9%	\$58,580	\$72,230	18.9%	45%	Bachelor's degree
Tellers	1,340	13.5%	\$23,620	\$25,990	9.1%	16%	Short-term on-the-job training
Securities, commodities, and financial services sales agents	1,380	24.8%	\$90,470	\$53,390	-69.5%	67%	Bachelor's degree
Insurance underwriters	1,290	6.3%	\$60,120	\$53,960	-11.4%	53%	Bachelor's degree
Loan officers	1,820	11.5%	\$62,610	\$53,640	-16.7%	49%	Bachelor's degree
Brokerage clerks	160	20.0%	\$39,990	\$33,530	-19.3%	31%	Moderate-term on-the-job training
Personal financial advisors	440	41.0%	\$89,220	\$78,990	-13.0%	81%	Bachelor's degree
Insurance appraisers, auto damage	N/A	12.5%	\$52,020	\$40,880	-27.3%	47%	Postsecondary vocational award
Claims adjusters, examiners, and investigators	2,240	8.9%	\$55,470	\$48,890	-13.5%	47%	Long-term on-the-job training
Actuaries	420	23.7%	\$95,420	\$85,770	-11.3%	99%	Bachelor's or higher degree + experience
Credit analysts	300	1.9%	\$62,820	\$61,120	-2.8%	60%	Bachelor's degree
Loan counselors	120	4.0%	\$41,990	\$34,170	-22.9%	49%	Bachelor's degree
Financial analysts	1,100	33.8%	\$81,700	\$63,330	-29.0%	87%	Bachelor's degree
Financial examiners	250	10.7%	\$73,550	\$75,630	2.8%	76%	Bachelor's degree
Correspondence clerks	70	12.0%	\$30,600	\$29,740	-2.9%	16%	Short-term on-the-job training

Source: BLS Occupational & Employment Statistics

OCCUPATIONAL REQUIREMENTS

RETAIL / HOSPITALITY / LEISURE

Primarily, occupations in this industry require short-term on-the-job training and wages tend to be low (although this is due, in part to the fact that many of these jobs are part-time positions). With such a strong retail and hotel market, the city does benefit from a significant number of hospitality managers (i.e. chefs, food service managers, lodging managers) all of whom make above average wages. As West Des Moines continues to build its statewide niche within this particular sector, it should focus workforce development efforts on these management-type positions that are likely to grow.

Key Occupations in the Retail / Hospitality / Leisure Industry							
Occupation	Employment		Average Wage			Occupational Information	
	Des Moines- West Des Moines MSA	10-year U.S. Growth Projection	US	Des Moines- West Des Moines MSA	Wage Differential	% with Bachelor's Degree+	Education
Hosts and hostesses, restaurant, lounge, and coffee shop	750	10.4%	\$17,770	\$16,590	-7.1%	17%	Short-term on-the-job training
Cooks, restaurant	2,230	11.5%	\$21,960	\$20,940	-4.9%	5%	Long-term on-the-job training
Cooks, fast food	940	8.3%	\$16,860	\$16,010	-5.3%	5%	Short-term on-the-job training
Hotel, motel, and resort desk clerks	570	17.4%	\$20,100	\$20,460	1.8%	14%	Short-term on-the-job training
Waiters and waitresses	5,200	10.8%	\$18,570	\$17,490	-6.2%	14%	Short-term on-the-job training
Lodging managers	100	12.2%	\$51,140	\$41,260	-23.9%	45%	Work experience in a related occupation
Dishwashers	800	10.4%	\$17,060	\$17,220	0.9%	3%	Short-term on-the-job training
Chefs and head cooks	140	7.6%	\$40,700	\$35,190	-15.7%	14%	Work experience in a related occupation
Bartenders	1,450	11.2%	\$19,740	\$17,830	-10.7%	17%	Short-term on-the-job training
Dining room and cafeteria attendants and bartender helpers	630	11.8%	\$17,380	\$16,570	-4.9%	6%	Short-term on-the-job training
Food service managers	330	5.0%	\$48,660	\$47,760	-1.9%	24%	Work experience in a related occupation
Cooks, short order	210	4.8%	\$19,580	\$18,610	-5.2%	5%	Short-term on-the-job training
Combined food preparation and serving workers	6,990	18.1%	\$16,700	\$16,950	1.5%	5%	Short-term on-the-job training
First-line supervisors/managers of food preparation	1,650	11.3%	\$29,930	\$30,810	2.9%	14%	Work experience in a related occupation
Counter attendants	1,000	10.2%	\$17,820	\$17,200	-3.6%	8%	Short-term on-the-job training

Source: BLS Occupational & Employment Statistics

OCCUPATIONAL REQUIREMENTS

INFORMATION TECHNOLOGY

Top occupations in this profession – primarily computer analysts and database administrators – require a high level of educational attainment and all are expected to grow significantly. Wages in this industry tend to be high, although, in some cases, are significantly lower in the West Des Moines region than nationally.

DMACC West and regional 4-year institutions will continue to be important assets for the West Des Moines community and its ability to develop high-tech talent. In addition, the city's K-12 systems will also be critical in providing city students with the appropriate science, engineering, and math expertise to align to any number of these specialized occupations.

Key Occupations in the Information Technology Industry							
Occupation Title	Employment		Average Wage			Occupational Information	
	Des Moines- West Des Moines MSA	10-year U.S. Growth Projection	US	Des Moines- West Des Moines MSA	Wage Differential	% with Bachelor's Degree+	Education
Telecommunications equipment installers and repairers	740	2.5%	\$51,760	\$49,320	-4.9%	13%	Postsecondary vocational award
Telecommunications line installers and repairers	330	4.6%	\$46,570	\$35,280	-32.0%	8%	Long-term on-the-job training
Computer software engineers, systems software	750	28.2%	\$90,780	\$76,560	-18.6%	85%	Bachelor's degree
Computer software engineers, applications	1,450	44.6%	\$85,660	\$74,260	-15.4%	85%	Bachelor's degree
Network systems and data communications analysts	970	53.4%	\$70,760	\$67,300	-5.1%	57%	Bachelor's degree
Computer systems analysts	3,180	29.0%	\$75,890	\$70,230	-8.1%	68%	Bachelor's degree
Computer support specialists	1,210	12.9%	\$45,300	\$45,270	-0.1%	43%	Associate degree
Network and computer systems administrators	1,110	27.0%	\$67,850	\$67,160	-1.0%	50%	Bachelor's degree
Computer and information systems managers	790	16.4%	\$113,880	\$100,210	-13.6%	73%	Bachelor's or higher degree + experience
Technical writers	110	19.5%	\$62,780	\$45,530	-37.9%	74%	Bachelor's degree
Sales engineers	50	8.5%	\$86,350	\$61,590	-40.2%	79%	Bachelor's degree
Database administrators	220	28.6%	\$70,260	\$68,490	-2.6%	72%	Bachelor's degree
Computer hardware engineers	80	4.6%	\$94,270	\$80,630	-16.9%	70%	Bachelor's degree
Electronics engineers, except computer	170	3.7%	\$85,550	\$77,300	-10.7%	81%	Bachelor's degree
Sales representatives, services, all other	1,770	27.9%	\$57,480	\$56,080	-2.5%	48%	Work experience in a related occupation

Source: BLS Occupational & Employment Statistics

OCCUPATIONAL REQUIREMENTS

LIFE SCIENCES (PLANT/ANIMAL SCIENCES)

The top occupations for life sciences have been broken down into Plant & Animal Sciences / R&D and Health Care because these two subsectors of life sciences have very different occupational distributions.

Engineers, scientists and technicians are the most in-demand professions for the R&D branch of life sciences – and underscore the importance of a coordinated 2-year and 4-year educational system providing important physical science, engineering, and agri-business programs. While these industries may not be large job generators at this point, the occupations within provide very high salaries.

As the city aims to attract high-tech life science firms focused on nutraceutical development and plant genomics, it must ensure that it focuses job training programs around these emerging niches.

Key Occupations in the Life Sciences Industry - Plant & Animal Sciences / R&D

Occupation	Employment		Average Wage			Occupational Information	
	Des Moines- West Des Moines MSA	10-year U.S. Growth Projection	US	Des Moines- West Des Moines MSA	Wage Differential	% with Bachelor's Degree+	Education
Veterinary technologists and technicians	160	41.0%	\$28,920	\$26,280	-10.0%	16%	Associate degree
Veterinarians	160	35.0%	\$84,090	\$54,560	-54.1%	100%	First professional degree
Veterinary assistants and laboratory animal caretakers	150	15.7%	\$22,180	\$19,890	-11.5%	10%	Short-term on-the-job training
Social science research assistants	N/A	12.4%	\$38,120	\$36,090	-5.6%	46%	Associate degree
Natural sciences managers	100	11.4%	\$113,170	\$118,360	4.4%	93%	Bachelor's or higher degree + experience
Microbiologists	N/A	11.2%	\$66,430	\$58,120	-14.3%	95%	Doctoral degree
Nonfarm animal caretakers	300	18.4%	\$21,180	\$18,620	-13.7%	16%	Short-term on-the-job training
Chemists	70	9.1%	\$68,520	\$58,620	-16.9%	93%	Bachelor's degree
Social scientists and related workers, all other	N/A	4.7%	\$69,720	\$68,900	-1.2%	90%	Master's degree
Statisticians	40	8.5%	\$72,150	\$56,280	-28.2%	93%	Master's degree
Life, physical, and social science technicians, all other	40	9.8%	\$41,230	\$36,590	-12.7%	46%	Associate degree
Chemical technicians	N/A	5.8%	\$42,420	\$33,580	-26.3%	37%	Associate degree
Agricultural and food science technicians	150	6.6%	\$35,520	\$29,570	-20.1%	32%	Associate degree
Electronics engineers, except computer	170	3.7%	\$85,550	\$77,300	-10.7%	81%	Bachelor's degree
Electrical engineers	N/A	6.3%	\$82,090	\$60,120	-36.5%	81%	Bachelor's degree

Source: BLS Occupational & Employment Statistics

OCCUPATIONAL REQUIREMENTS

LIFE SCIENCES (HEALTH CARE)

As our nation's population ages, demand for health care services will continue to increase significantly ensuring continued demand for surgeons, physicians, dentists, technicians and nurses. The top health care professions represent a variety of educational requirements, from short-term training to professional degrees. With two new regional hospitals, West Des Moines must – as a workforce development priority – ensure that local job training programs are aligned to these hospital needs. In addition to the occupations identified below, RNs, LPNs, and experienced physicians were all identified by industry representatives as “difficult to fill” positions to fill locally.

Key Occupations in the Life Sciences Industry - Health Care

Occupation	Employment		Average Wage			Occupational Information	
	Des Moines- West Des Moines MSA	10-year U.S. Growth Projection	US	Des Moines- West Des Moines MSA	Wage Differential	% with Bachelor's Degree+	Education
Oral and maxillofacial surgeons	N/A	9.1%	\$178,440	N/A	N/A	100%	First professional degree
Dental hygienists	570	30.1%	\$64,910	\$63,460	-2.3%	33%	Associate degree
Physical therapist aides	50	24.4%	\$24,080	\$26,860	10.3%	23%	Short-term on-the-job training
Diagnostic medical sonographers	110	19.1%	\$60,590	\$52,660	-15.1%	25%	Associate degree
Nuclear medicine technologists	40	14.8%	\$65,380	\$61,230	-6.8%	25%	Associate degree
Dentists, general	100	9.2%	\$147,010	\$155,400	5.4%	100%	First professional degree
Cardiovascular technologists and technicians	160	25.5%	\$46,530	\$41,800	-11.3%	25%	Associate degree
Dental assistants	380	29.2%	\$32,280	\$35,260	8.5%	9%	Moderate-term on-the-job training
Surgical technologists	90	24.5%	\$38,800	\$35,530	-9.2%	16%	Postsecondary vocational award
Medical secretaries	780	16.7%	\$30,050	\$30,590	1.8%	18%	Moderate-term on-the-job training
Radiologic technologists and technicians	600	15.1%	\$51,150	\$44,450	-15.1%	25%	Associate degree
Medical assistants	810	35.4%	\$28,270	\$30,270	6.6%	10%	Moderate-term on-the-job training
Physical therapist assistants	80	32.4%	\$44,340	\$38,880	-14.0%	23%	Associate degree
Physician assistants	180	27.0%	\$77,800	\$77,270	-0.7%	67%	Master's degree
Respiratory therapists	140	22.6%	\$50,930	\$43,840	-16.2%	28%	Associate degree

Source: BLS Occupational & Employment Statistics

OCCUPATIONAL REQUIREMENTS

ADVANCED LOGISTICS / MANUFACTURING

This industry includes a mix of educational requirements from on-the-job training for assembly and equipment mover personnel to bachelor's degrees and higher for mechanical, industrial, and computer hardware engineers.

Many of these occupations fall at or just below the average wages for the region, making the "wage threshold" issue an important factor for the city. While the city will likely be targeting smaller, advanced logistics and higher-tech manufacturing firms, this will continue to be issue that must be explored by the region. Importantly, there are demonstrable salary increases from even minor occupational training upgrades, meaning that enhanced job training efforts (incumbent/customized) could be an important future focus area for economic development efforts.

Similar to the information technology sector description above, as manufacturing processes become more sophisticated and computerized, it will be necessary to build regional engineering talents, particularly when trying to capture emerging and complex fields such as renewable energy and biotech.

Key Occupations in the Advanced Logistics / Manufacturing Industry							
Occupation Title	Employment		Average Wage			Occupational Information	
	Des Moines- West Des Moines MSA	10-year U.S. Growth Projection	US	Des Moines- West Des Moines MSA	Wage Differential	% with Bachelor's Degree+	Education
Cargo and freight agents	N/A	16.5%	\$38,760	\$39,770	2.5%	16%	Moderate-term on-the-job training
Aircraft mechanics and service technicians	150	10.6%	\$49,670	\$47,870	-3.8%	11%	Postsecondary vocational award
Fiberglass laminators and fabricators	N/A	6.2%	\$27,490	\$26,300	-4.5%	5%	Moderate-term on-the-job training
Welders, cutters, solderers, and brazers	790	5.1%	\$33,960	\$34,760	2.3%	2%	Postsecondary vocational award
Multiple machine tool setters, operators, and tenders, metal and plastic	150	0.3%	\$32,280	\$30,020	-7.5%	3%	Moderate-term on-the-job training
Computer hardware engineers	80	4.6%	\$94,270	\$80,630	-16.9%	70%	Bachelor's degree
Industrial engineering technicians	40	9.9%	\$51,410	\$40,320	-27.5%	18%	Associate degree
Industrial engineers	210	20.3%	\$73,490	\$59,210	-24.1%	74%	Bachelor's degree
Mechanical drafters	110	5.2%	\$46,690	\$41,440	-12.7%	25%	Postsecondary vocational award
Mechanical engineers	200	4.2%	\$75,130	\$63,020	-19.2%	78%	Bachelor's degree
Material moving workers, all other	N/A	0.7%	\$33,170	\$33,250	0.2%	6%	Moderate-term on-the-job training
Painters, transportation equipment	120	8.4%	\$38,870	\$36,330	-7.0%	4%	Moderate-term on-the-job training
Team assemblers	1,240	0.1%	\$26,470	\$29,360	9.8%	5%	Moderate-term on-the-job training
Engineering managers	110	7.3%	\$115,610	\$91,000	-27.0%	84%	Bachelor's or higher degree + experience
Electronics engineers, except computer	170	3.7%	\$85,550	\$77,300	-10.7%	81%	Bachelor's degree

Source: BLS Occupational & Employment Statistics

REAL ESTATE REQUIREMENTS

REAL ESTATE REQUIREMENTS FOR TARGETED INDUSTRIES

In addition to different “occupational” requirements, West Des Moines must also meet specific target industry “real estate and facility” requirements. Understanding the real estate implications of particular target industry choices is particularly important given the city’s current comprehensive planning process that is ongoing simultaneous to the economic development strategic plan. The city’s robust office and retail market conditions will greatly benefit many of the targeted niches. However, the extremely low inventory of light industrial options could be a shorter-term roadblock for important industry growth, especially around the Iowa-5 Corridor and the West Des Moines’ Grand Technology Gateway (Grand Ave. to 105th St.). It is imperative that the land use and zoning decisions (and transportation/infrastructure projects) outlined in the comprehensive plan and the target industry decisions in the economic development plan are complementary¹.

To provide an up-to-date look at industry real estate and facility requirements, AngelouEconomics reviewed recent site selection trends in Iowa and surrounding states (Kansas, Missouri, and Nebraska). While project activity has been down due to the recession, there have been a number of location and expansion projects that provide insight into the amount of investment and the size of the facilities being built in this four-state region. Since July of this year, there have been eleven office and/or headquarter projects within this larger region, three of which were expansions. Capital investment amounts for these projects range from \$2 million to \$8 million and the square footage ranges from 15,000 Sq. Ft. to 300,000 Sq. Ft. There have also been twenty-one manufacturing projects, eleven of which were new locations and ten of which were expansions. Capital investment for these projects starts at \$1 million and reaches up to \$200 million. The facilities range from 20,000 Sq. Ft. to 200,000 Sq. Ft.

See the figures below for typical specifications for the target industries identified for West Des Moines, based on these recent site selection trends. While these are presented as “typical”, it is important to keep in mind that there are countless possibilities and configurations in each sector.

Example: Flex Industrial

Typical Specs:

- 50,000 - 200,000 SF
- \$10-20 million investment in building and equipment

Industries:

- Life Sciences
- Logistics / Advanced Manufacturing



Example: Manufacturing

Typical Specs:

- 20,000 – 150,000 SF
- \$15-30 million investment in building and inventory

Industries:

- Advanced Manufacturing



Example: Office

Typical Specs:

- 50,000 SF - 200,000 – SF Class A office
- \$5-15 million investment in building and inventory

Industries:

- Financial Services

¹ The Comprehensive Plan had not been approved at the time that this report was written. Comments are based on the proposed plan.

REAL ESTATE REQUIREMENTS

- Information Technology
- Life Sciences

The table below highlights real estate requirements of the target industries and identifies several key examples from recent projects in Iowa.

TYPICAL REAL ESTATE REQUIREMENTS FOR WDM TARGET INDUSTRIES (AND EXAMPLES OF RECENT REGIONAL PROJECTS)		
West Des Moines Target Industry	Typical Property Type	State Example
Financial Services / Insurance	Office	EXPANSION – Bearance (Des Moines, IA) •Insurance •\$8 mil; 15,000 SF Office •45 Employees
Information Technology	Office (software development; IT/back office support) Light Industrial (data centers)	NEW – TEAM Technologies (Des Moines, IA) •Information Solutions •\$14 mil; 17,000 SF Office •11 employees EXPANSION – LightEdge Solutions (Des Moines, IA) •IT and Business Communications •\$13 mil; 15,000 SF Office •74 Employees
Life Sciences	Office (health care IT; back office services specialized medical care) R&D / Flex (Agri-based bioscience R&D and testing)	EXPANSION - Renewable Energy Group (Ames, IA) •Biofuels development •Research lab with commercialization focus added to headquarters •Lab space to be shared with other companies •\$2 mil; \$470K investment from Iowa Power Fund •7 full-time researchers EXPANSION – Pioneer (Des Moines, IA Region) •Agricultural products •~\$17 mil; 60,000 SF R&D •160 employees
Advanced Logistics / Manufacturing	Light Industrial (Medical device manufacturing; equipment / component manufacturing) Flex/R&D (global supply chain management / freight forwarding)	NEW - Sector 5 Technologies Inc. (Oelwein, IA) •Wind turbine components manufacturing •\$3 mil; 161, 000 SF Manufacturing •100 employees EXPANSION – Carleton Life Support Systems (Davenport, IA) •Computer electronics manufacturing •\$5 mil; 30,000 SF Manufacturing •80 employees

Source: Conway Data; AngelouEconomics

TRANSITION TO RECOMMENDATIONS

SUMMARY AND NEXT STEPS

Despite some labor market and economic challenges identified in the Economic Scan, West Des Moines brings to bear a number of key assets, many still untapped, that put it in an excellent position to capture growth from a number of innovative and emerging industries. West Des Moines' future economic development strategies must:

- Reinforce and build upon currently concentrated core targets in financial services, health care and retail/hospitality, ensuring critical support structures are in place to maintain market share and capture spin-off opportunities.
- Diversify into other fast growing industries in which the city and region are already carving niches.
- Position the city for emerging industry opportunities built upon innovative technological applications.

All of these efforts will require the city to address several issues that were identified in the Economic Scan (Report #1), along with the target industries identified in this report. These issues will provide the basis for the development of the economic development plan. The plan will be action-oriented and will include short term strategies to capitalize on the industry cluster targets, as well as longer-term "foundational" strategies to improve the workforce system, infrastructure, business climate, and innovation environment within the city.

The following page highlights key issues identified in the previous report along with some "Key Opportunities" that are being explored that are likely to be part of the city's economic development strategic plan. Note that this list of opportunities represents concepts at this point and may not be all inclusive.

TRANSITION TO RECOMMENDATIONS

Economic Development Areas	Issues Identified in Report #1 <i>Economic Scan</i>	Opportunities To Be Explored and Detailed
Business Attraction/ Retention	City has developed a strong financial services and retail industry cluster. Opportunity exists to build on that while also diversifying into other strategic opportunities. City's incentive tool set is limited and land costs/property taxes, regionally, are high often creating an impediment for small business development/expansion. Business retention efforts could be more organized and performed more consistently.	<ul style="list-style-type: none"> • Focus marketing, sales trips, conferences targeted industry areas • Establish an advisory committee to support city-wide e/d efforts • Strengthen the economic development section of the City website • Utilize the retention and expansion program to help identify suppliers and related companies for possible recruitment • Develop annual e/d report including promotion of recent successes • Build appropriate financial/tax support packages (i.e. incentives for existing businesses/revolving loan fund) and tie to attraction, <i>retention</i>, and <i>redevelopment</i> efforts of targeted industry firms. • Expand/coordinate business call program and software (outreach and analysis)
Land Use and Infrastructure	Superior location along two interstates; and city has an exceptional reputation for infrastructure development and efficient city regulatory processes – all of which has supported a historically strong office market. The current comp planning efforts provides opportunity for city to align zoning and land use to new target industries – and ensure future infrastructure development is coordinated. Growing office and industrial presence along I-5 Corridor will be important in creating a more “global” presence.	<ul style="list-style-type: none"> • Align economic development plan with comp plan (specifically around real estate requirements of target industries). Requires mix of class A/B and flex space • Develop light industrial space/sites, critical to supporting targets • Collaborate with neighboring cities/counties on an annual joint market update event program to the Des Moines regional commercial real estate and infrastructure community • Continue to push for funding for construction of “Grand Technology Corridor,” 105th St to Grand Avenue – and use as tool to integrate DMACC West (& tech presence) into e/d business attraction efforts
Workforce Development	City benefits from strong education and workforce components (K-12 system, DMACC). As the city grows and diversifies its industry base, it must integrate economic and workforce development efforts to ensure that a local workforce has the right competencies to feed into new growing businesses (e.g. new hospitals, IT firms, etc) that will require a number of highly skilled professionals. Low wages across target industries will continue to be a double edged sword – attracting new potential businesses while turning away young educated workers.	<ul style="list-style-type: none"> • New/expanded community college programs for Health Information Technology, nurse practitioners, and financial service fields • Promote DMACC programs at K-12 levels, including creation of regional career academy around IT, retail/leisure, and/or financial services cluster • Ensure WDM representation on regional workforce investment board to increase city's private sector's ability to impact curriculum and job training programs • Lead Central Iowa Works new Retail Sector Board initiative • Facilitate relationship with Iowa State and Univ of Iowa to connect around internship/career placement opportunities
Entrepreneurship & Innovation	Although the Des Moines region has an emerging strong technology foundation, the availability of capital and other resources for emerging start-ups are limited. This type of activity requires considerable resources including venture capital, angel funding, and support networks. The region lags in each of these categories. Relationship with Iowa State around “innovation” facilitation is just developing.	<ul style="list-style-type: none"> • Enhance community support infrastructure for entrepreneurship (develop master calendar of events, participate in Iowa's my.entre.net, and host regional “Entrebasheshes”) • Strengthen relationship with Iowa State tech transfer efforts (facilitate visits to VRAC, connect hospitals/IT firms to IA State bio-health innovations) • Create Incubator Task Force and continue to develop space in WDM. Use best practices to ensure it is focused on target industries and it incorporates appropriate level of business, legal, and mentoring support services • Incorporate more entrepreneurship programs in K-12 systems
Quality of Life	Objective is not to compete with downtown Des Moines, but additional cultural amenities (e.g. performing arts center, convention center, etc) could be an avenue for attracting additional visitors and, as importantly, creating a destination for younger adults. Limited strategy exists for the city to better connect retail, hospitality, cultural events, and enhanced public transit. Older commercial areas in need of redevelopment to support small business while providing “sense of place” for young professionals.	<ul style="list-style-type: none"> • Get Young Professionals more engaged in city-specific economic development efforts • Cross-promotion with DM (downtown initiatives vs. shopping initiatives) and connect retail centers through transit • Focus on events/draws that target young professionals
Internal Org	City has reached a size where economic development efforts (business retention, expansion) can be done in a more targeted fashion and with more active engagement regionally. Even within Greater Des Moines Partnership framework, relationships with other area communities appears strained. Economic development-specific funding is very limited.	<ul style="list-style-type: none"> • Push for consistent economic development annual budget allocation • Push for additional staff and/or training opportunities around entrepreneurship/incubation and target industry areas

APPENDIX: TARGET INDUSTRY CLUSTERS: BACKGROUND AND METHODOLOGY

The development of competitive clusters is one of the key generators of regional wealth. A cluster develops when businesses in interrelated industries choose to locate in close proximity to take advantage of a region's inherent advantages. These businesses then become interdependent on each other, enhance their operating environments, and ultimately become more competitive on the global landscape. When this happens, these businesses become the experts in their field. They become more profitable, grow faster, and pay higher wages. This report describes AngelouEconomics' process in selecting these targets, and includes with a detailed profile on each cluster.

BACKGROUND

Traditionally, the growth of economies has been described in terms of a region's "basic," or "primary" industries. These industries typically export their goods or services outside the region, thereby supporting local industries such as retail, housing construction, and personal services through payroll and local purchases. Primary industries reflect an injection of outside money into the community and have a high economic impact. A typical primary business may create two additional jobs in the local economy for every one job at its facility. For this reason, communities across the country compete to recruit or retain these high-impact, primary businesses. Manufacturing is a good example of a primary industry cluster, as most customers are found throughout the U.S. and abroad. With the manufacturing industry in decline and business today increasingly global, many more industries are "primary" in their make-up: distribution centers may serve a multi-state region, back office operations can serve a company's global network of employees, and custom software companies can build Internet applications that can serve businesses anywhere in the world. Federal installations such as military bases or federal research labs are clear examples of how government can be classified as a primary industry.

High wage jobs are usually found at national or global companies that are enjoying growth. Businesses in similar primary industries tend to form clusters, which are highly integrated groups of businesses with strong vertical and horizontal linkages. Clusters form among businesses that share similar markets, labor, technology, and processes. By locating in close proximity, these elements are more enhanced than they would be if only a single business existed in a region.

Historically, clusters agglomerated in specific regions of the U.S. due to natural advantages (e.g. natural resources and climate), cost factors (e.g. distance to market, labor costs), and existing transportation infrastructure. Today, companies are increasingly drawn to regions that can supply the unique workforce they need. Universities and public sector institutions such as education and training facilities are now major drivers of regional economies. Clusters often mature when businesses expand their relationships with existing supplier firms in a region. An established industry cluster contains a mix of primary, supplier, and support firms and thus drives the co-location of a well-diversified "critical mass" of production, labor, and information.

The presence of an inventory of supporting assets enables businesses within an industry cluster to be more competitive than a firm operating alone. This enhanced competitive position allows the cluster, and the region in which the cluster is located, to be more productive and generate higher levels of output. Increased regional output, in turn, drives growth in regional employment, wage, and income levels. Because of the direct correlation between the presence of an industry cluster and enhanced competitiveness, companies across the nation seek out locations that have strong cluster concentrations. The business attraction effect, coupled with the ability of industry clusters to generate regional wealth, are primary reasons why cluster analysis is widely used in economic development strategic planning.

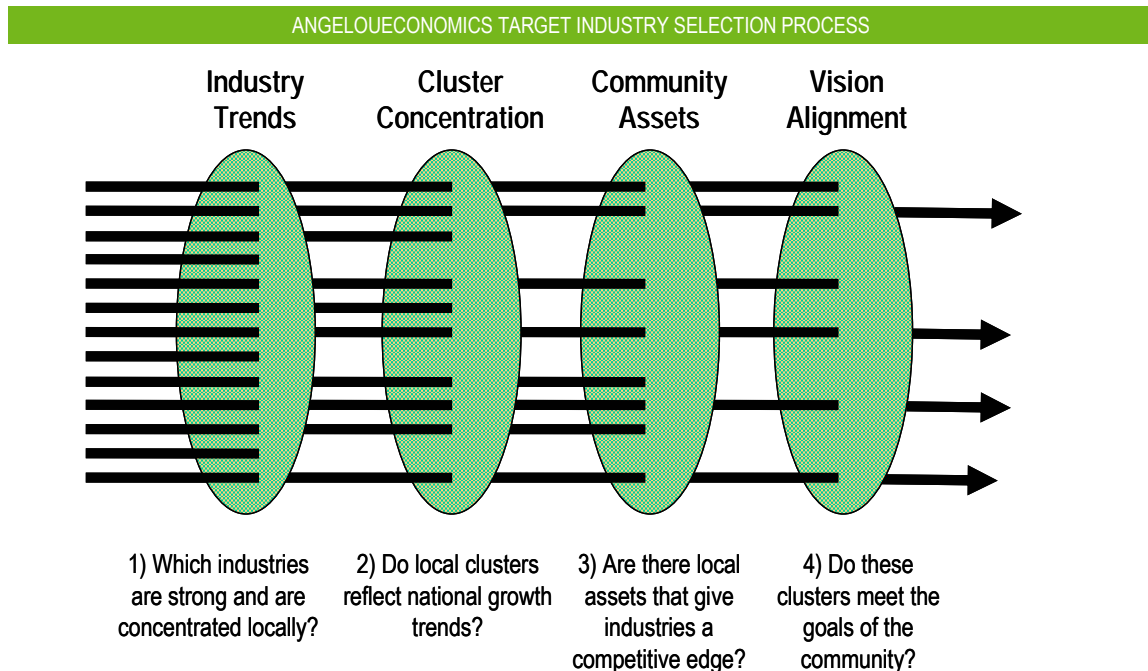
APPENDIX

Approaching target industry selection from a cluster perspective also helps to align a region's external marketing and internal asset improvement initiatives. Generally, the needs and marketing messaging appropriate for one business in a specific cluster will resonate with all businesses in that cluster. Because of this, marketing efforts can be more focused on specific target audiences and the unique needs of the clusters that support those audiences. Once the cluster audience is identified and its needs are assessed, it is necessary to craft one tailored marketing strategy for all of the companies in the cluster. Also, because clusters tend to locate in a few areas nationally and internationally, marketing messages can be specifically focused on certain geographical areas, saving time and money.

In the same way, communities can also have a focused approach to improve their regional assets (the region's "product") to better serve targeted clusters. As with marketing efforts, all companies in the same cluster have similar specific location requirements, whether it's a skilled workforce, access to capital, a strong transportation system, local R&D assets, etc. Once these unique needs are determined for the cluster, the region can work on building and enhancing these specific assets locally. For example, to cultivate a biosciences cluster, the region's colleges and universities can implement bioscience specific degree programs or workforce training programs. Instead of focusing on general education and workforce training, these institutions can specifically target programs that will enhance the region's target clusters.

METHODOLOGY

AngelouEconomics employs a combination of quantitative and qualitative analysis to select the best target industries for a community. Our approach includes four steps guided by several questions.



APPENDIX

Step 1: What clusters exist locally? How strong are they?

The first step in the target industry selection process is to identify the current industry clusters that exist in the West Des Moines region. These are the industry groups that support the current economic landscape. Understanding these clusters and identifying the underlying assets that facilitated their development can be important knowledge for the formation of future clusters. Often, new clusters form based on spin-off technologies, products, or processes from an existing cluster. These new clusters tend to be based on an advancement or breakthrough over their parent cluster. They tend to be more desirable industry targets because they require higher knowledge, higher wage earning individuals. It is critical then, to be fully aware of the trends in current clusters in order to be prepared to capture and cultivate potential emerging cluster opportunities. The current presence of a cluster, however, does not necessarily translate into that cluster's selection as a target industry in which a community should build its future economic base. For example, despite the fact that an industry may support many local jobs, it may also provide low wages and be in national decline.

AngelouEconomics has created 35 cluster definitions that achieve a much higher level of detail than the standard classification of the 10 major industries (manufacturing, construction, services, government, etc.). This methodology categorizes businesses according to their final product and how these products are related to each other and integrated along the vertical supply chain. The results are a more accurate and detailed examination of industries than the broad method used currently by the Census. To assess the strength of a cluster in a regional economy, AngelouEconomics has calculated location factors (or quotients) for each cluster. These factors are calculated by comparing the cluster's share of total local employment to the cluster's national share. This location quotient will yield a value generally between 0 and 2, where a result of 1 demonstrates that the cluster commands an average (expected) share of the local economy. Cluster location factors greater than 2 indicate a strong cluster agglomeration, while those less than 0.5 indicate extremely weak clusters.

The table on the following page is a static cluster analysis that shows the current cluster location factors for West Des Moines, the Des Moines MSA and the state of Iowa.

West Des Moines enjoys cluster strength in:

- **Financial Services**

With a location quotient of 4.09, financial services is the most concentrated industry cluster in West Des Moines, accounting for 14.6 percent of jobs in the city. Many national financial and insurance corporations including Wells Fargo and Aviva have chosen to expand business operations in West Des Moines, making the city a regional hub for this industry.

- **Software & IT Services**

While Software & IT Services represent only a small percentage of West Des Moines' business establishments, a location quotient of 3.19 indicates a local specialization in the area. Microsoft is set to break ground on a large data center project in West Des Moines which will drive future growth in this sector.

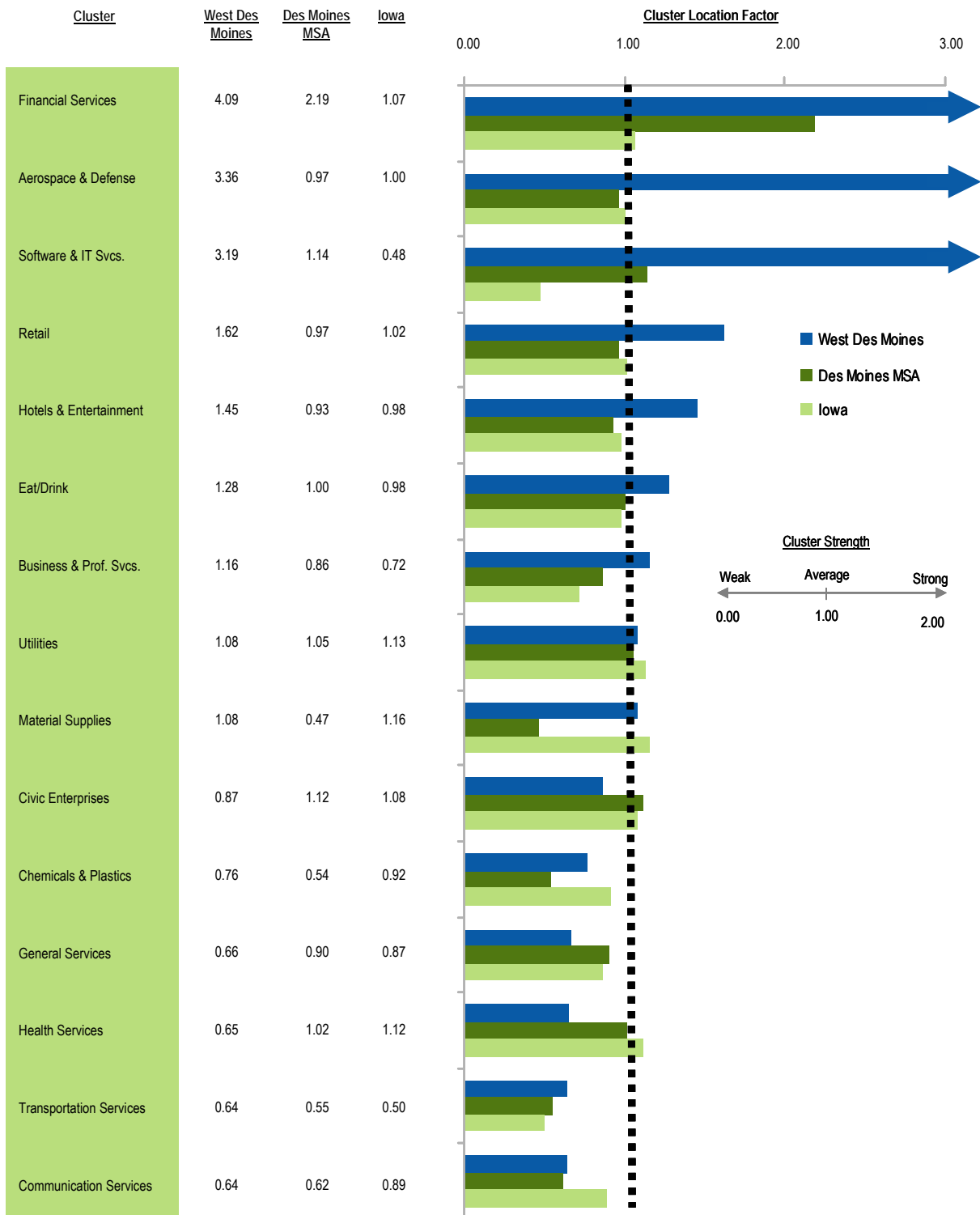
- **Retail**

Employing over 6,000 people and accounting for 18 percent of local jobs, the retail industry is a large cluster for West Des Moines. In the past five years, with the construction of the Jordan Creek Town Center, the Galleria at Jordan Creek, the Village of Ponderosa and West Glen Town Center, West Des Moines has become a regional retail destination. Many national brands, such as Target, and Wal-mart, as well as many specialty stores, such as Pottery Barn, have locations in West Des Moines.

Note: While West Des Moines has a high location quotient in Aerospace & Defense, this cluster is made up of only two businesses and very few employees. For this reason, it is not considered to be one of the city's top clusters.

APPENDIX

TOP 15 WEST DES MOINES INDUSTRY CLUSTERS, 2009

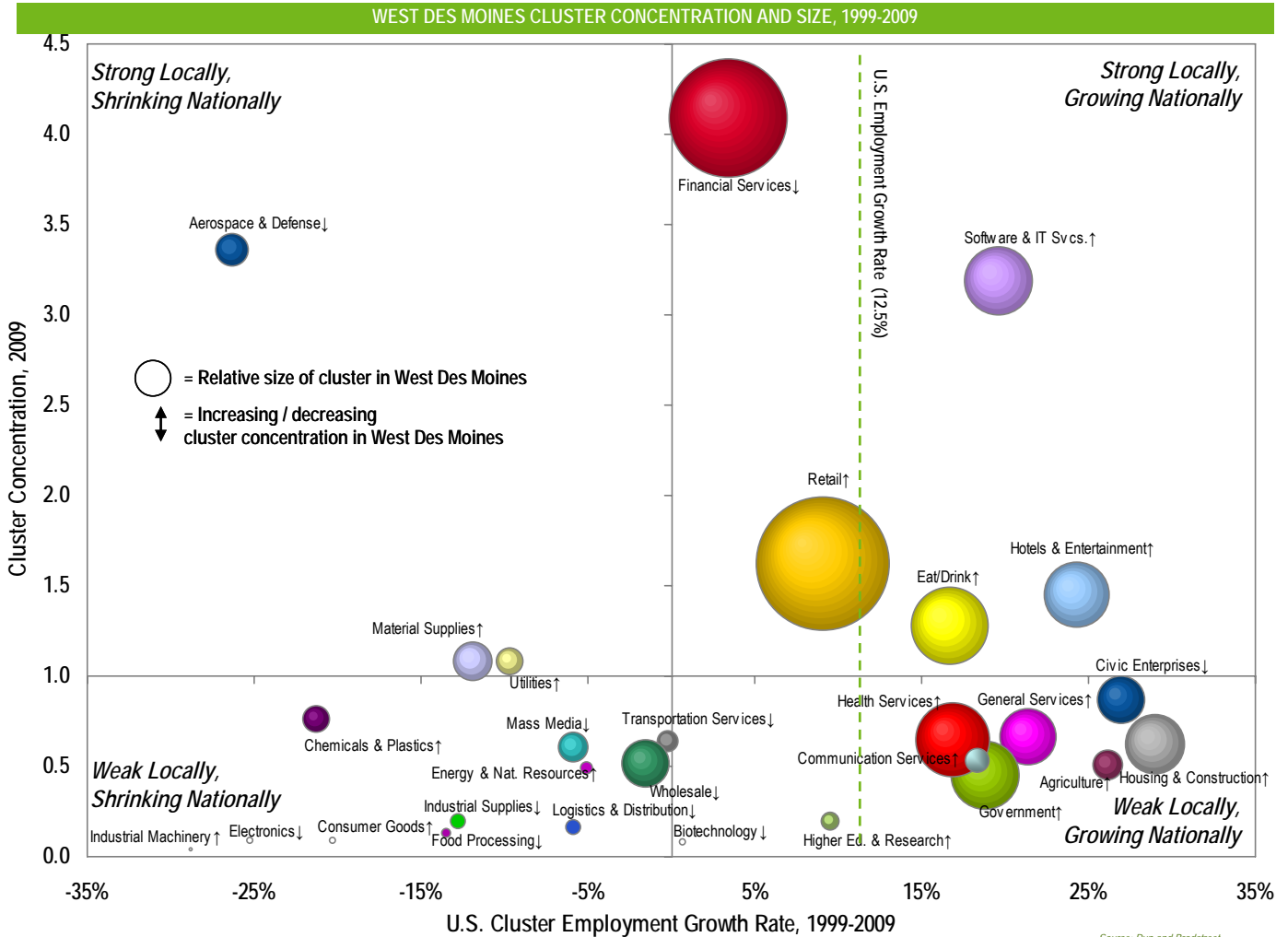


Source: Dun and Bradstreet

APPENDIX

Step 2: Do current and emerging local industry clusters reflect national industry growth trends?
 Target selection must identify existing, strong clusters in the region, but also consider how clusters are gaining strength locally. Clusters can gain strength in two ways:

1. Above-average growth nationally. This will result in a larger cluster employment concentration in West Des Moines.
2. An increasing cluster concentration ratio. A growing cluster concentration in a region indicates that a cluster is capturing a larger share of new jobs in the U.S., suggesting an improvement in the region's attractiveness and competitiveness for the cluster. We show these two forces in the following diagram:



This chart displays the results from a shift-share analysis conducted to determine strength of local industry clusters relative to the national economy. This analysis identifies industry sectors that are gaining strength by outperforming national trends as well as those local sectors that capture a larger share of new jobs in the U.S., suggesting an increased attractiveness and competitiveness for the regional cluster. The vertical axis represents the industry's local strength (as indicated by its location quotient (LQ) or cluster, see p. 45 for LQ explanation); a higher position means a stronger industry concentration. The horizontal axis represents the industry's growth nationwide over the past ten years; a position on the left half of the chart indicates negative growth, while a

APPENDIX

position on the right side indicates positive growth. The size of the bubble represents the relative amount of employment in the industry; the larger the bubble, the more people work in this industry in West Des Moines.

This analysis reinforces the West Des Moines region's strengths in financial services, information technology (software & IT services) and retail & hospitality (retail, eat/drink, hotels & entertainment). The bubble chart also reveals several specific findings:

- The West Des Moines region is well positioned for future growth. Many of the region's largest clusters are growing nationally. In addition, many of the region's smaller industries are growing nationally, indicating strong opportunities for growth. Very few of the industries with a high concentration in West Des Moines are shrinking nationally.
- Sectors that are weak locally and growing nationally show potential for further development and economic growth for the region. While biotechnology employment in West Des Moines is small, employment figures are increasing in the health services locally and nationally, as is higher education and research.

The shift-share analysis provides only a quantitative snapshot of specialized regional sectors. The information revealed in this analysis must be further combined with an understanding of regional economic strengths, broad industrial trends and potential, and synchronization with an understanding of regional goals and vision identified through focus groups and interviews. This process will assist in establishing economic development targets that truly match the region's capacities and desires.

While the current national downturn has had a major negative impact on a number of different industries nationally, some, namely health care and technology (computer systems design, internet services and data processing), are, and will continue, to grow. In addition, most economists believe that industries that were performing well prior to the recession (e.g. financial services, retail, life sciences, etc.) will likely rebound again in 2010 and continue on their growth trajectories.

Step 3: Are there local assets that give specific industries a competitive edge?

The city boasts a number of important assets that, if leveraged, can position it for continued strong economic development growth.

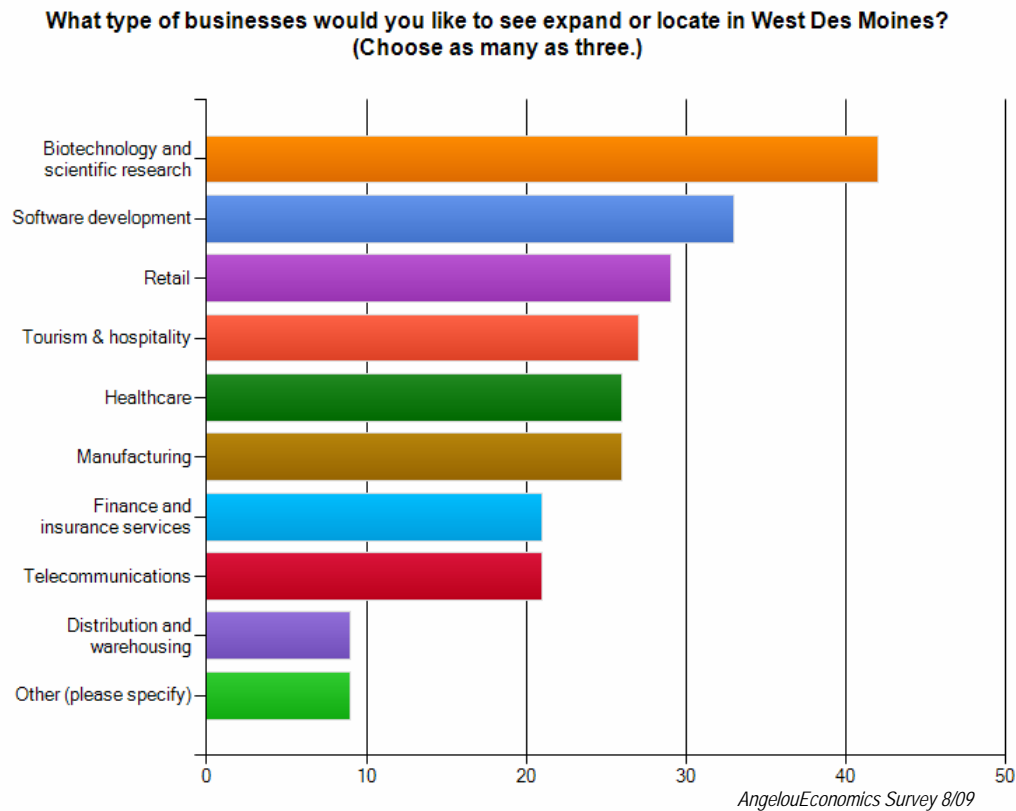
- Superior location at cross-section of I-80, I-35, and I-235 providing ease of mobility and access.
- I-5 corridor – and its connection to the Des Moines International Airport – is a crucial asset toward developing a more “global” industry presence for the city.
- Available land and very strong retail market (especially in office and retail space), even in the down economy.
- Top high school graduation rates and skilled workforce with a very strong work ethic.
- The DMACC-West campus and its focus on technology simulation programming.
- Drake University (with particularly strong business programs) and Iowa State University (with more than \$210 million in R&D dollars annually) offer great opportunities to continue to build a skilled workforce and tap into more “innovation-based” industries.
- With new major corporate locates and expansions including Aviva, Wells Fargo, Iowa Clinic, and Mercy West Lakes and Methodist West hospitals, the city also has at its disposal some dynamic private sector “assets” within global companies.

APPENDIX

Step 4: Does the industry meet the community's goals and does the region satisfy the minimum requirements of the cluster?

Finally, the most important criterion is often whether or not the industry matches the stated economic goals of the community. For West Des Moines, for example, there was an expressed interest in avoiding large manufacturing businesses. Focus group, interview, and survey data, gathered by AngelouEconomics, identified a strong interest in attracting more high-tech and life science (e.g. biotechnology) firms as well as companies (e.g. specialty home grown retail) that help maintain a small-town appeal.

The following figure displays the results of a survey question as answered by West Des Moines residents. The chosen target industries presented in this report are congruent with community members' goals and interests.



APPENDIX

The above analysis is summarized in the following “Industry Match” table. For each cluster, we examine West Des Moines’ suitability for a typical business. We rate the region’s strength in several areas:

- National potential (is it growing and does it pay high wages?)
- Local Match (does West Des Moines meet the requirements (labor force, infrastructure, cost structure) of the industry?)
- Is it conducive to community goals (as ascertained in focus groups and surveys)?

The following table is a summary of all the qualifications that are part of the target industry selection process. If West Des Moines meets the requirements of an industry, we place a checkmark. Those that meet the industry requirements and offer opportunities for gaining local cluster strength were selected as potential targets.

West Des Moines Industry Match									
Industry Cluster	National Potential			Local Match				Conducive to West Des Moines goals?	Target Industry (meets majority of criteria)? AND Final Target Groupings for West Des Moines
	Positive National Growth	High Wages	Relocation Trends	Cluster LQ Coefficient	Cost Structure	Labor Force	Infrastructure		
Financial Services	✓	✓	✓	4.09	✓	✓	✓	✓	✓ Financial Services/ Insurance
Software & IT Services	✓	✓	✓	3.19	✓	✓	✓	✓	✓ Information Technology
Retail/ Leisure			✓	1.62	✓	✓	✓	✓	✓ Retail/Leisure
Wholesale				0.52	✓		✓		
Material Supplies				1.08			✓		
Chemicals & Plastics				0.76			✓		
Advanced Manufacturing	✓	✓	✓	0.20* <small>*Industrial supplies</small>	✓		✓	✓	✓ Advanced Logistics & Manufacturing
Logistics & Distribution		✓	✓	0.16	✓		✓	✓	✓ Advanced Logistics & Manufacturing
Biotechnology	✓	✓		0.08	✓		✓	✓	✓ Life Sciences
Housing & Construction				0.62			✓		
Energy & Natural Resources	✓	✓		0.49	✓				
Health Services	✓	✓		0.65	✓	✓	✓	✓	✓ Life Sciences
Electronics		✓		0.09			✓		

APPENDIX

The following table summarizes the target industry recommendations and niche sectors discussed in this report.

WEST DES MOINES TARGET INDUSTRY SUMMARY		
TARGET INDUSTRY	DEFINTION	NICHES
Financial Services / Insurance	The financial services and insurance industry is comprised of commercial banks, savings institutions, credit companies, investment and brokerage houses, financial leasing firms, and insurance companies. Financial service providers include equipment leasing companies, brokerage and investment banking firms and back-office credit operations. Insurance services firms include companies that provide coverage for health care, homeowner, automotive, life, property/casualty and reinsurance liability and protection.	<ul style="list-style-type: none"> • Subsidiary Support Services: The subsidiary services industry is comprised of third-party support operations including software development, out-sourced administrative functions, and data processing and storage. • IT/Back Office: A financial services company is logically broken up into three parts: the front office includes sales personnel and corporate finance, the middle office manages risk and IT resources, and the back office provides administrative and support services. Back office support professionals are administration and support personnel in a financial services company.
Retail / Hospitality / Leisure	The retail / hospitality / leisure industry is defined as both the sale of goods directly to consumers as well as the accommodations, entertainment, and recreation opportunities to tourists, visitors, as well as residents.	<ul style="list-style-type: none"> • Full-Service Hotels: Full-service hotels are properties that include an on-site restaurant serving breakfast, lunch and dinner, room service, meeting space, business center, health club facilities and a bellstaff. • Specialty Retail: Specialty retailers sell one type of product, as opposed to department stores that sell many different kinds; they offer a much larger selection of items within a product category. While specialty retail encompasses many merchandise categories, a few popular types include apparel, home accessories and arts & crafts. Because they cannot compete on price with large-scale operations, boutiques offer more personalized service and one-of-a-kind, often customized merchandise. Unlike national chains that sell the same merchandise throughout the country, many boutiques are region-specific, for example specializing in lowa-specific goods. • Arts / Cultural Enterprises: Arts and cultural enterprises encompasses a number of business and non-profit activities like art schools and galleries, music venues, museums, performing arts centers and artist studios.
Information Technology	The information technology industry is comprised of computer programming services, prepackaged software, data processing, information retrieval services, website hosting, internet service providers, telecommunications and computer systems design.	<ul style="list-style-type: none"> • Software Development: The software sector is comprised of computer programming services, prepackaged software, data processing, and information retrieval services. Potential areas of growth are in gaming, regulatory compliance software, open source software, security software, virus protection software, anti-spam software, and business intelligence software. • Back Office / IT - Health Care and Financial: The financial services and health care industries will require increasing levels of back-office support (see overlapping niche within the Financial Services/Insurance industry). • Data Centers: Data centers are operations that provide digital information storage for customers and corporate clients. They are composed of clusters of computers and network switching gear that allows efficient and highly reliable transfer of data. • Bioinformatics: Bioinformatics is the science of informatics as applied to biological research. Informatics is the management and analysis of data using advanced computing techniques.

Continued on the following page.

APPENDIX

TARGET INDUSTRY	DEFINITION	NICHES
Life Sciences	<p>For the purposes of this study, the life sciences industry is defined by two components: 1) direct patient care (hospitals, nursing facilities, medical centers); and 2) the designers and manufacturers of medical/veterinary products and institutions involved with primarily animal and plant science research (i.e. biotechnology). This includes the emerging technological advances and scientific research into genetics and bioinformatics that will increase yields, enhance soil and water quality, and ultimately improve nutrition and health to consumers</p>	<ul style="list-style-type: none"> • Specialized Health Care Service Centers: These are medical centers with specialized services that fill gaps not being serviced by the existing and new acute care hospitals in the city. Regional medical centers that offer diagnostics, surgery, and ongoing nursing care, along with specialized pediatric, neuroscience, cancer, substance abuse, or diet control care could be viable niche targets. • Health Care IT / Back Office Services: Back office support functions in the health care industry include but are not limited to insurance claims processing, medical coding, billing and customer service. • Equipment / Medical Device Manufacturing & Logistics: Medical device firms design and manufacture surgical and diagnostic equipment in a field that is closely regulated, research intensive, and has comfortable operating margins. Medical logistics functions, on the other hand, comprise an important part of the health care system: after staff costs, medical supplies are the single most expensive component of health care. • Agri-Based Bioscience - R&D and Testing: This niche includes biotechnology activities related to plant genomics, biofuel applications (which is tied to renewable energy activities) , and other agriculture related subsectors.
Advanced Logistics / Manufacturing	<p>The advanced manufacturing sector is defined by a set of activities that focus on the design, manufacturing, and assembly of complex products utilized in a range of modern industries, including telecommunications, farm equipment, health care, and energy supply.</p> <p>Advanced logistics is the process of planning, implementing, and controlling the efficient flow of goods and services through the supply chain from producer to consumer. While the “distribution” component of supply chains will continue to be serviced by “lower-tech” transportation suppliers, including trucks, airplanes, and ships; logistical coordination is a high value-added service that will drive industry growth in coming years. Technical workers dominate employment in this field. It is composed of advanced just-in-time coordination and the related electronic devices, often called “track and trace.”</p>	<ul style="list-style-type: none"> • Freight Forwarding: Freight forwarders provide logistics services to companies of all sizes, routing shipments through third-party transportation modes, including passenger air carriers and air freight lines, oceangoing container lines, intermodal rail operations and trucking lines. Freight forwarders dominate the international air transportation markets, controlling more than 85% of the volume of trade flows. • Logistics Systems / Supply Chain Management: The logistics systems design and software niche is a growing market that is aimed at optimizing the performance of people, places, and processes (increasing efficiencies in shipping, warehousing, and cargo transportation). • Equipment / Component Manufacturing (including renewable energy): This subsector of advanced manufacturing encompasses the manufacturing of machinery for diverse industries, including farm equipment and metal machinery, and transportation equipment. • Composites Manufacturing: Composite materials are scientifically engineered materials formed by mixing at least two constituent materials in order to create a product with highly specific physical properties. Composites have traditionally been composed of polymers and resins produced from petrochemicals and other chemical compounds, but a highly exciting emerging field focuses on bio-composites.